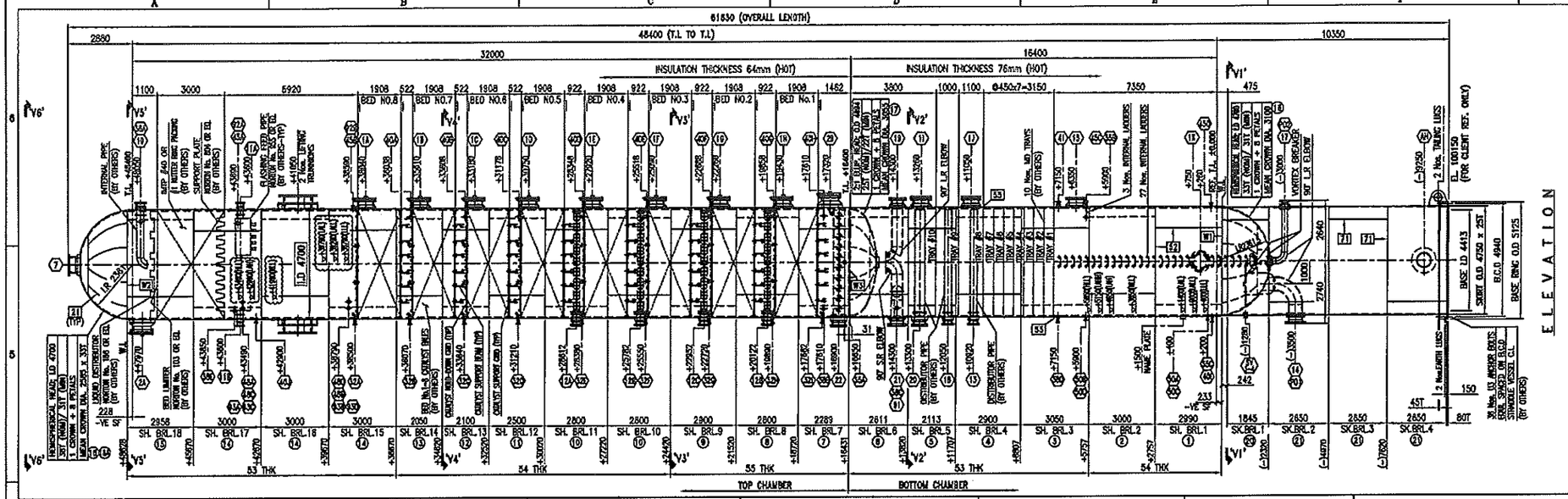
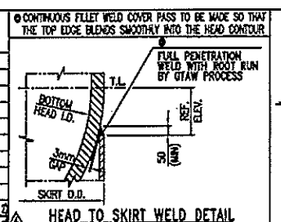


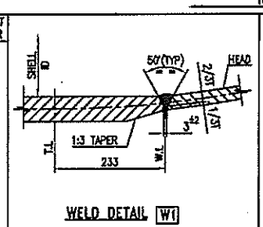

## BELLELI REFERENCE DRAWINGS

| | |
|---|---|
| W-7478-02-001 | ORIENTATION OF NOZZLES (SHEET 2 OF 2) |
| W-7478-02-028 | DETAIL DRAWING (SHEET 1 OF 2) |
| W-7478-02-029 | DETAIL DRAWING (SHEET 2 OF 2) |
| W-7478-02-030 | FORMED HEAD (TOP) |
| W-7478-02-031 | FORMED HEAD (BOTTOM) |
| W-7478-02-032 | FORMED HEAD (INTERMEDIATE) |
| W-7478-02-033 | SRN FORGING DETAILS |
| W-7478-02-034 | TRAY SUPPORT DETAILS |
| W-7478-02-035 | CATALYST SUPPORT GRIDS, HOLD-DOWN GRIDS |
| W-7478-02-036 | SUPPORT DET. FOR CATALYST SUPP. GRIDS & HOLD-DOWN GRIDS (SH.1 OF 2) |
| W-7478-02-037 | SUPPORT DET. FOR CATALYST SUPP. GRIDS & HOLD-DOWN GRIDS (SH.2 OF 2) |
| W-7478-02-038 | DISTRIBUTOR FOR NOZZLES 12A, 12B, 12C & 12D |
| W-7478-02-039 | VAPOUR DRAW OFF FOR NOZZLE 21 |
| W-7478-02-040 | VAPOUR RETURN DISTRIBUTOR FOR NOZZLE 22 |
| W-7478-02-041 | CLIPS FOR PLATFORMS & LADDERS (SH. 1 OF 2) |
| W-7478-02-042 | CLIPS FOR PLATFORMS & LADDERS (SH. 2 OF 2) |
| W-7478-02-043 | CLIPS FOR PIPE SUPPORTS/ GUIDES/ INSULATION/ FIRE PROOFING (SH.1 OF 6) |
| W-7478-02-044 | CLIPS FOR PIPE SUPPORTS/ GUIDES (SH. 2 OF 4) |
| W-7478-02-045 | CLIPS FOR PIPE SUPPORTS/ GUIDES (SH. 3 OF 4) |
| W-7478-02-046 | CLIPS FOR PIPE SUPPORTS/ GUIDES (SH. 4 OF 4) |
| W-7478-02-047 | LIFTING TRUNNION/ TAILING LUG |
| W-7478-02-048 | CLIENT NAME PLATE |
| W-7478-02-049 | ASME NAME PLATE |
| W-7478-02-050 | MANWAY DAVIT 24"-300# |
| W-7478-02-051 | MANWAY DAVIT 30"-300# |
| W-7478-02-052 | DETAIL OF BED LIMITER SUPPORT |
| W-7478-02-053 | NITROGEN PURGING ARRANGEMENT |
| W-7478-02-054 | JIG AND GAUGE PLATE |
| W-7478-02-055 | HYDROTEST ARRANGEMENT (SHEET 1 OF 2) |
| W-7478-02-056 | SHIPPING ARRANGEMENT (SHEET 2 OF 2) |
| W-7478-02-057 | FINISH REQUIREMENTS |
| LSH SDWG 2703-01.2026 | VORTEX BREAKER |
| GF-C87280 | STANDARD MANHOLES AND COVERS FOR PRESSURE VESSELS |
| GD-N99994 | STANDARD FIREPROOFING DETAILS FOR SKIRT |
| GD-C78878 | STANDARD SKIRT AND BASE DETAILS FOR VERTICAL VESSELS |
| GC-C99794 | LOCATION OF 8 INCH VENT FOR VERTICAL VESSELS |
| GB-C99772 | STANDARD LADDER RUNGS INSIDE COLUMNS AND VESSELS |
| GA-C1267 | VERTICAL PRESSURE VESSEL FABRICATION TOLERANCES |
| VEFV1123 | VESSEL: VERTICAL, INSULATION AND FIREPROOFING SUPPORTS |
| VEFV1121 | VESSEL: PIPE GUIDES |
| VEFV1120 | VESSEL: PIPE SUPPORTS |
| VEFV1103 | VESSEL: GROUNDING LUG |
| JCP-00-PD-SD-1001 | NAME PLATE FOR VESSEL |
| JCP-00-K4-SD-016 | STEEL STANDARD – CIRCULAR PLATFORM |
| JCP-00-K4-SD-015 | STEEL STANDARD – LADDER CAGES |
| JCP-00-K4-SD-014 | STEEL STANDARD – LADDER |
| JCP-00-AD-SD-1001 | STANDARD ANCHOR BOLT SCHEDULE FOR OCTAGONAL FOUNDATION |
| JGS 300-011-5-07E | GENERAL CONDITIONS FOR VENDOR SPECIALISTS |
| JCP-00-QI-GS-1002 | NON-CONFORMANCE CONTROL PROCEDURE |
| JCP-00-QI-GS-1001 | INSPECTION AND COORDINATION PROCEDURE WITH VENDOR |
| JCP-00-B4-GS-1001 | SHIPPING AND PACKING INSTRUCTIONS |
| JCP-00-N3-GS-1002 | PROJECT SPECIFICATION FOR RUST PREVENTION |
| JCP-00-N0-GS-001 | PROJECT SPECIFICATION FOR PAINTING (SHOP AND FIELD |
| JCP-00-DO-GS-1102 | EQUIPMENT NOZZLE LOADING |
| JCP-00-DO-GS-1101 | VESSEL DESIGN FOR WIND AND EARTHQUAKE LOADING |
| JCP-00-DO-GS-1104 | ANCHOR BOLTS JIG AND GAUGE PLATE FOR VERTICAL VESSELS |
| JCP-00-DO-GS-1103 | INSTALLATION AND MARKING FOR PRESSURE VESSELS |
| JCP-00-DO-GS-002 | SPECIFICATION FOR CS PRESSURE VESSELS FOR GENERAL SERVICE |
| JCP-00-DO-GS-001 | SPECIFICATION FOR HEAVY WALL CARBON STEEL AND LOW ALLOY STEEL PRESSURE VESSEL. |
| JCP-00-P1-BE-003 | BASIC ENGINEERING DESIGN DATA |
| JCP-00-GZ-GS-003 | INSTRUCTION FOR VENDOR DOCUMENTATION |
| JCP-DS-R-3201 | MECHANICAL DATA SHEET FOR ALKYLATOR |
| DRAWING No. | DESCRIPTION |

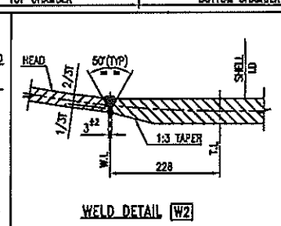
CLIENT'S REF. DWGS. & SPECS.



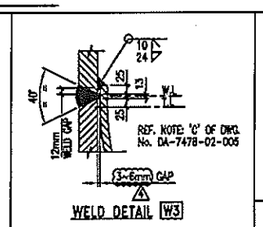

HEAD TO SKIRT WELD DETAIL



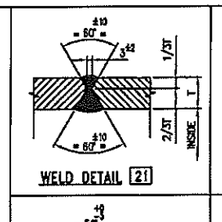

WELD DETAIL W1



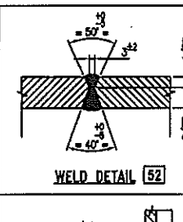

WELD DETAIL W2



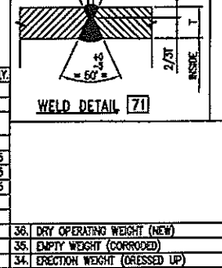

WELD DETAIL W3



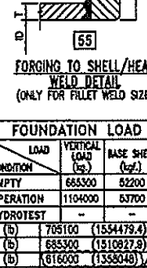

WELD DETAIL 21




WELD DETAIL 52




WELD DETAIL 71




FORGING TO SHELL/HEAD WELD DETAIL (ONLY FOR FILLET WELD SIZE)

| | |
|---|---|
| 31. | ITEM SHALL BE PROMINENTLY PAINTED ON TWO SIDES WITH WHITE PAINT IN BLOCK LETTERS AS FOLLOW 'POST WELD HEAT TREATED DO NOT WELD, HAMMER OR DISTORT'. |
| 30. | NO WELDING SHALL BE DONE ON THE PRESSURE CONTAINING PARTS OF THE VESSEL AFTER PWHT OR HYDROTEST. |
| 29. | VENT SHALL BE PROVIDED IN ALL EXTERNAL PADS AND SIMILAR ATTACHMENTS. THE VENT SHALL BE DRILLED AND TAPPED 1/4" NPT PRIOR TO INSTALLATION ON THE VESSEL. |
| 28. | THE FOLLOWING TOTAL CORROSION ALLOWANCE SHALL BE APPLIED TO ALL INTERNALS MADE OF CARBON STEEL<br>a) 1.5 TIMES THE SHELL CORROSION ALLOWANCE FOR PARTS WELDED TO VESSEL.<br>b) SAME CORROSION ALLOWANCE AS THAT OF SHELL FOR MAJOR BEAMS.<br>c) 0.8 mm FOR ALL OTHER REMOVABLE INTERNALS. |
| 27. | REACTOR INSIDE SURFACES ARE TO BE BLASTED TO NEAR WHITE METAL AND PROVIDED WITH N2 BLANKETING FOR PROTECTION AGAINST CORROSION DURING SHIPMENT. N2 BLANKETING IS TO BE HELD DURING CONSTRUCTION AND PRIOR TO INSTALLATION OF INTERNALS. INTERNALS MUST BE FREE OF GRIT & DEBRIS AFTER BLASTING. |
| 26. | FULL (100%) RADIOGRAPHY IS REQUIRED FOR INTERMEDIATE HEAD. |
| 25. | LIQUID SPECIFIC GRAVITY FOR DESIGN : 0.657 (T)/ 0.657 (B) |
| 24. | ALL SHELL & HEAD ATTACHMENTS, INCLUDING NOZZLE NECKS, MANWAY NECKS, REINFORCING PADS & CLIPS SHALL BE LOCATED A MINIMUM OF 50mm FROM VESSEL LONGITUDINAL & CIRCUMFERENTIAL SEAMS WHEN UNAVOIDABLE, THE SEAM WELD SHALL BE GROUND FLUSH & 100% RADIOGRAPHED TO A MINIMUM OF 50mm BEYOND EACH SIDE OF THE ATTACHMENTS. |
| 23. | PAINTING AS PER JGC SPEC. JCP-00-N0-GS-001. |
| 22. | FINISHED SURFACES SHALL BE COATED WITH HEAVY GREASE AND FLANGED OPENINGS SHALL BE PROPERLY PROTECTED WITH SUITABLE COVERS. |
| 21. | DELETED. |
| 20. | THE INNER EDGE OF MANHOLES & NOZZLES SHALL BE ROUNDED TO A RADIUS OF 3mm (MIN). UNLESS OTHERWISE SPECIFIED. |
| 19. | ALL SHARP EDGES & DISCONTINUOUS WELD PORTIONS SHALL BE GROUND SMOOTH. |
| 18. | 1 NO. 1/4" NPT TELL-TALE HOLE TO BE PROVIDED ON R.F PAD OF NOZZLE-'19' AT INTERMEDIATE HEAD THIS SHALL BE PNEUMATICALLY TESTED AT 1.0 bar(g). A SOAP SOLUTION SHALL BE USED TO INSPECT FOR LEAKS. |
| 17. | HARDNESS REQUIREMENT : 200 BHN MAX. FOR BASE METAL AND FOR WELDS. |
| 16. | STANDARD HYDROSTATIC TEST SHALL BE PERFORMED AT TEMPERATURE NOT LOWER THAN 17C (62.6F). WATER USED FOR TESTING SHALL HAVE CHLORIDE CONTENT OF LESS THAN 50 PPM. |
| 15. | ENTIRE EQUIPMENT SHALL UNDERGO PWHT AS PER THE FOLLOWING CYCLE :-<br>LOADING TEMP. : 400C (MAX.) HOLDING TIME : 2 HOURS 15 MINUTES (MIN.)<br>RATE OF HEATING : 80C/HOUR (MAX.) HOLDING TEMP. : 610C ±10<br>RATE OF COOLING : 100C/HOUR (MAX.) UNLOADING TEMP. : 400C (MAX.) |
| 14. | ▭ MARK INDICATES THE BSHI WELD STANDARD NUMBER.<br>○ MARK INDICATES THE POSITION NUMBER WITH REFERENCE TO LIST OF MATERIAL<br>○ MARK INDICATES THE NOZZLE MARK NUMBER. |
| 13. | VESSEL TOLERANCES SHALL BE AS PER STD. GA-C1267. |
| 12. | ALL INT. & EXT. ATTACHMENT WELDED TO THE VESSEL SHALL BE CONTINUOUS SEAL WELDED, EXCEPT THAT A 25mm SKIP IN THE BOTTOM OF AN INTERNAL PAD SHALL BE MADE FOR A VENT. |
| 11. | PARTS SHIPPED LOOSE ARE TO BE SHOP FIT-UP AND PIECE MARKED PRIOR TO SHIPMENT. |
| 10. | GASKET USED FOR SHOP HYDROTEST FOR BUNDED NOZZLES & MANHOLES SHALL BE THE SAME AS THE SERVICE GASKET. |
| 9. | 200% SPARE GASKETS AND SX FASTENERS (MIN. 1 SET) TO BE SHIPPED LOOSE FOR ALL SERVICE BUNDED NOZZLES & MANWAYS. |
| 8. | ALL REMOVABLE INTERNALS SHALL PASS THROUGH THE NEAREST MANWAY, THE CATALYST SUPPORT GRATING PANELS ARE TO FIT THROUGH A 30" MANHOLE & CATALYST HOLD DOWN GRID GRATING PANELS ARE TO FIT THROUGH A 24" MANHOLE. |
| 7. | NOZZLE PROJECTION IS FROM C.L. OF VESSEL TO GASKET FACE OF FLG. UNLESS OTHERWISE SPECIFIED. |
| 6. | FLANGES UPTO & INCLUDING 24" NB SHALL BE AS PER ASME B16.5 AND ABOVE 24" NB SHALL BE IN ACCORDANCE WITH ASME B16.47 SERIES 'B' |
| 5. | ALL BOLTS & NUTS SHALL BE OF UNC SERIES UPTO AND INCL. 1" SIZE AND 8UN ABOVE 1" SIZE. |
| 4. | NOZZLES POSITIONS ON VESSEL ELEVATIONS ARE CONVENTIONAL. FOR TRUE LOCATION SEE NOZZ. ORIENTATION. |
| 3. | GASKET SURFACE ON RAISED FACE FLANGES TO BE COMMERCIALLY SMOOTH WITH ROUGHNESS OF 125-250 RMS. |
| 2. | BOLT HOLE IN NOZZLE & MANHOLE FLANGES LOCATED IN HEADS OF VERTICAL VESSELS SHALL STRADDLE THE PRINCIPAL CENTERLINE OF THE VESSEL. BOLT HOLES IN NOZZLE & MANHOLE FLANGES LOCATED IN SHELLS SHALL STRADDLE THE VERTICAL CENTERLINE OF THE VESSEL. |
| 1. | ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED. |

GENERAL NOTES

| | |
|---|---|
| 32. | THE INTERMEDIATE HEAD DOES NOT ALLOW PRESSURING THE UPPER PART AND THE LOWER PART OF THE REACTOR SEPARATELY. HYDROSTATIC TEST WILL BE PERFORMED FILLING THE WATER IN BOTH UPPER AND LOWER PORTIONS OF THE REACTOR, AND PRESSURIZED SIMULTANEOUSLY. ALL NECESSARY MEANS TO EQUALIZE THE PRESSURE IN EACH COMPARTMENT. |

GENERAL NOTES CONTD...

| MARK | QTY | SIZE | PROJ. FROM CL | SERVICE | O/D | SCH. | Tnk | TYPE (SEE NOTE 6) | RATING LB | O/D | HEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AH | 1 | LD 600 | – | ACCESS HOLE | 650 | PLT. | 25.0 | – | – | 1100 | 25 |
| PO2 | 1 | 18" | – | PIPE OPENING | 457 | 40 | 14.27 | – | – | 914 | 25 |
| PO1 | 1 | LD 790 | – | PIPE OPENING | 840 | PLT. | 25.0 | – | – | 1680 | 25 |
| SV 1~4 | 4 | 6" | – | SKIRT VENT | 168.3 | 40 | 7.11 | – | – | – | – |
| 93 A~D | 4 | 1.5" | 2560 | SPARE w/B.F. | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 57 |
| 92 A,B | 2 | 1.5" | 2560 | SPARE w/B.F. | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 57 |
| 91 | 1 | 2" | 2650 | SPARE w/B.F. | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 57 |
| 50 B,D | 2 | 1.5" | 2560 | LEVEL TRANSMITTER | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 57 |
| 50 A,C | 2 | 1.5" | 2560 | LEVEL TRANSMITTER | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 56 |
| 48 A~D | 4 | 1.5" | 2560 | LEVEL TRANSMITTER | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 57 |
| 45 D | 1 | 1.5" | 2560 | LEVEL BRIDDLE | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 56 |
| 45 A,B,C | 3 | 1.5" | 2560 | LEVEL BRIDDLE | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 57 |
| 41 | 1 | 3" | 2870 | TEMPERATURE CONTROL | 117.5 | – | 20.85 | INTEG.FORG. | 300# | 177 | 120 |
| 40 J | 1 | 1.5" | 2560 | TEMPERATURE INDICATOR | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 57 |
| 40 F,H | 3 | 1.5" | 2560 | TEMPERATURE INDICATOR | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 56 |
| 40 A~E | 6 | 1.5" | 2560 | TEMPERATURE INDICATOR | 69.9 | – | 15.9 | INTEG.FORG. | 300# | 98 | 56 |
| 38 B | 1 | 2" | 2650 | PRESSURE DIFF. TAP | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 55 |
| 38 A,C,D | 4 | 2" | 2650 | PRESSURE DIFF. TAP | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 57 |
| 35 B,C | 2 | 2" | 2650 | UTILITY CONNECTION | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 55 |
| 35A | 1 | 2" | 2650 | UTILITY CONNECTION | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 55 |
| 32 G~I | 3 | 2" | 2650 | SAMPLE CONNECTION | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 55 |
| 32 B~F | 5 | 2" | 2650 | SAMPLE CONNECTION | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 56 |
| 32A | 1 | 2" | 2650 | SAMPLE CONNECTION | 84.0 | – | 18.6 | INTEG.FORG. | 300# | 111 | 57 |
| 22 | 1 | 20" | 2800 | VAPOUR RETURN (e/VAPOUR SPARGER) | 587.4 | – | 39.7 | INTEG.FORG. | 300# | 768 | 150 |
| 21 | 1 | 20" | 2790 | VAPOUR DRAWOFF | 587.4 | – | 39.7 | INTEG.FORG. | 300# | 768 | 125 |
| 20 | 1 | 18" | 2780 | LIQUID RETURN | 533.4 | – | 38.1 | INTEG.FORG. | 300# | 707 | 115 |
| 19 | 1 | 18" | 2780 | LIQUID DRAWOFF | 533.4 | – | 38.1 | INTEG.FORG. | 300# | 707 | 115 |
| 18 | 1 | 12" | 2740 | FEED FROM R-3202 | 374.7 | – | 34.95 | INTEG.FORG. | 300# | 485 | 100 |
| 17 | 1 | 10" | SEE DWG. | LIQUID BOTTOM OUTLET (e/VORTEX BREAKER) | 273.1 | – | 15.1 | WNRF | 300# | 403 | 50 |
| 15 | 1 | 24" | 2810 | FROM REBOILER F-3201/B (e/LIQUID DISTRIBUTOR) | 702.0 | – | 46.0 | INTEG.FORG. | 300# | 920 | 115 |
| 14 | 1 | 24" | SEE DWG. | TO REBOILER F-3201/A/B (e/VORTEX BREAKER) | 610.0 | – | 20.0 | WNRF | 300# | 850 | 65 |
| 13 | 1 | 12" | 2740 | FEED FROM ETHYLENE (e/LIQUID DISTRIBUTOR) | 374.7 | – | 34.95 | INTEG.FORG. | 300# | 485 | 100 |
| 12 C,D | 2 | 12" | 2740 | FEED FROM ETHYLENE (e/ETHYLENE DIST.) | 374.7 | – | 34.95 | INTEG.FORG. | 300# | 485 | 98 |
| 12 A,B | 2 | 12" | 2740 | FEED FROM ETHYLENE (e/ETHYLENE DIST.) | 374.7 | – | 34.95 | INTEG.FORG. | 300# | 485 | 99 |
| 11 A,B | 2 | 8" | 2710 | FEED FROM R-3203 (e/FLUSHING FEED PIPE) | 260.4 | – | 28.6 | INTEG.FORG. | 300# | 324 | 100 |
| 10 | 1 | 12" | 2740 | FEED FROM P-3203A/B | 374.7 | – | 34.95 | INTEG.FORG. | 300# | 485 | 100 |
| 7 | 1 | 24" | SEE DWG. | VAPOUR OUTLET TO E-3202 | 702.0 | – | 46.2 | INTEG.FORG. | 300# | 900 | 150 |
| 2 A,B | 2 | 30" | 2935 | MAN HOLE w/ DAVIT & B.F | 812.8 | – | 25.4 | INTEG.FORG. | 300# | 1132 | 130 |
| 1 G,H | 2 | 24" | 2810 | MAN HOLE w/ DAVIT & B.F | 702.0 | – | 46.0 | INTEG.FORG. | 300# | 920 | 123 |
| 1 B~F | 6 | 24" | 2810 | MAN HOLE w/ DAVIT & B.F | 702.0 | – | 46.0 | INTEG.FORG. | 300# | 920 | 124 |
| 1 A,J | 3 | 24" | 2810 | MAN HOLE w/ DAVIT & B.F | 702.0 | – | 46.0 | INTEG.FORG. | 300# | 920 | 125 |

NOZZLE SCHEDULE

| No. | DESIGN CONDITIONS | UNITS | TOP | BOTTOM |
|---|---|---|---|---|
| | | | VALUES | |
| 1. | DESIGN PRESSURE (INT./ EXT.) | kg/cm² (psig) | 28.0(398.25)/1.055(15.0) | 28.0(398.25)/1.055(15.0) |
| 2. | EXTERNAL PRESSURE (FOR STEAM OUT CONDITION) | kg/cm² (psig) | 3.52(7.4) @ 177(350.6) | 3.52(7.4) @ 177(350.6) |
| 3. | DESIGN TEMPERATURE (INT./ EXT.) | °C (°F) | 300(572)/ 300(572) | 300(572)/ 300(572) |
| 4. | WORKING PRESSURE | kg/cm² (psig) | 22.3 (317.16) | 22.3 (331.4) |
| 5. | WORKING TEMPERATURE | °C (°F) | 197(386.6)/221(429.8) | 203(397.4)/255(509) |
| 6. | FIELD PNEUMATIC TEST | kg/cm² (psig) | 38.63 (521) | |
| 7. | SHOP HYDROTEST PRESSURE (HOR.-TOP) | kg/cm² (psig) | 40.15 (571.1) | |
| 8. | M.A.P. (NEW & COLD) | kg/cm² (psig) | 31.29 (445) | 31.29 (445) |
| 9. | M.A.W.P AT DESIGN TEMPERATURE | kg/cm² (psig) | 28.18 (400.81) | 28.87 (410.62) |
| 10. | CORROSION ALLOWANCE (SHELL/HEAD) | mm | 3 (REFER NOTE-28) | |
| 11. | RADIOGRAPHY | --- | FULL (RT1) | |
| 12. | JOINT EFFICIENCY | % | 100 | |
| 13. | POST WELD HEAT TREATMENT | --- | YES (REFER NOTE-15) | |
| 14. | WET SOUR SERVICE/AMINE SERVICE | --- | NO/NO | |
| 15. | LETHAL SERVICE/CYCLIC SERVICE | --- | NO/NO | |
| 16. | CHARPY IMPACT TEST | --- | NO | |
| 17. | MINIMUM DESIGN METAL TEMPERATURE | °C (°F) | -1 (30.2) | |
| 18. | EARTHQUAKE ZONE | --- | N/A | |
| 19. | WIND SPEED | kph (mph) | 135 (83) | |
| 20. | INSPECTION AUTHORITY | --- | CLIENT/ BSHI/ AI | |
| 21. | LIQUID SPECIFIC GRAVITY | --- | 0.657 (T)/ 0.634 (B) @ OPERATING TEMPERATURE (REFER NOTE-25) | |
| 22. | INSULATION (BY OTHERS) | mm | 76/ 64 (REFER ELEVATION) | |
| 23. | FIREPROOFING (BY OTHERS) | mm | 51 (OUTSIDE ON SKIRT) | |
| 24. | VOLUME | m³ (ft³) | 894 (31571.31) | |
| 25. | SERVICE | --- | ALKYLATOR | |
| 26. | DESIGN CODE | --- | ASME SEC VIII DIV. 1 ED. 2001, INCL. 2003 ADD. | |
| 27. | CODE STAMP | --- | YES (U-STAMP) | |
| 28. | MANUFACTURER'S NAME | --- | BELLELI SAUDI HEAVY INDUSTRIES LTD. | |
| 29. | JOB NUMBER | --- | 7478-02 | |
| 30. | MANUFACTURER'S SERIAL No. | --- | 3523 | |
| 31. | FABRICATED WEIGHT | kg (lb) | 465000 (1025150) | |
| 32. | OPERATING WEIGHT (CORRODED) | kg (lb) | 1104000 (2433900) | |
| 33. | FULL OF WATER WEIGHT (SHOP) | kg (lb) | 1335900 (2944275.5) | |
| 34. | ERECTION WEIGHT (DRESSED UP) | kg (lb) | 816000 (1350440) | |
| 35. | EMPTY WEIGHT (CORRODED) | kg (lb) | 655300 (1510827.9) | |
| 36. | DRY OPERATING WEIGHT (NEW) | kg (lb) | 705100 (1554479.4) | |

DESIGN DATA

FOUNDATION LOAD (WIND)

| CONDITION | VERTICAL LOAD (kg.) | BASE SHEAR (kgf.) | MAX. MOMENT AT BASE (kgf-m) |
|---|---|---|---|
| EMPTY | 655300 | 52200 | 1605000 |
| OPERATION | 1104000 | 53700 | 1655000 |
| HYDROTEST | -- | -- | -- |

| REF. ITEM NO. | POS QTY FOR ONE UNIT | POS QTY FOR ONE TANK | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE TANK | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ITEM Nos. 22 TO 28 TRANSFERRED TO SRN FORGING DETAIL DWG. No. DA-7478-02-006 | | | | | | | | | |
| 21 | 3 | | SK. BRL. 2,3,4 | 14644 | 2650 | 25.0 | 7718.8 | 23159.4 | SA516GR70N | 7478A03L27 | 747800-003 | |
| 20 | 1 | | SK. BRL. 1 | 14644 | 1845 | 25.0 | 5374.8 | 5374.8 | SA516GR70N | 7478A03L26 | 747800-003 | |
| 19 | | | DELETED | | | | | | | | | |
| 18A | 1 | | TOP HEAD PETAL | 0 | 0 | 38.0 | 7903.5 | 7903.5 | SA516GR70N | 7446A02L41 | STOCK | |
| 18 | 1 | | TOP HEAD CROWN | 0 | 0 | 33.0 | 1478.4 | 1478.4 | SA516GR70N | 7478A03L09 | 747800-003 | |
| 17 | 1 | | ID 4694 O.D x 259(MIN) | 0 | 0 | 0.0 | 4927.0 | 4927.0 | SA516GR70N | 7478A03L06/L07 | 747800-003 | |
| 16 | 1 | | HH 4700 I.D x 359(MIN) | 0 | 0 | 0.0 | 8303.4 | 8303.4 | SA516GR70N | 7478A03L08/L10/L11 | 747800-003 | |
| 15 | 2 | | SH. BRL. 18 | 7468 | 2958 | 53.0 | 9188.2 | 18376.4 | SA516GR70N | 7478A03L15 | 747800-003 | |
| 14 | 6 | | SH. BRL. 15,16,17 | 7468 | 3000 | 53.0 | 6318.7 | 56612.2 | SA516GR70N | 7478A03L15,L16 | 747800-003 | |
| 13 | 2 | | SH. BRL. 14 | 7468 | 2050 | 54.0 | 6488.2 | 12976.4 | SA516GR70N | 7478A03L18 | 747800-003 | |
| 12 | 2 | | SH. BRL. 13 | 7468 | 2100 | 54.0 | 6647.6 | 13295.8 | SA516GR70N | 7478A03L19 | 747800-003 | |
| 11 | 2 | | SH. BRL. 12 | 7468 | 2500 | 54.0 | 7914.2 | 15828.4 | SA516GR70N | 7478A03L20 | 747800-003 | |
| 10 | 4 | | SH. BRL. 10, 11 | 7468 | 2800 | 54.0 | 8863.8 | 35453.6 | SA516GR70N | 7478A03L21 | 747800-003 | |
| 9 | 2 | | SH. BRL. 9 | 7468 | 2900 | 55.0 | 9351.7 | 18703.4 | SA516GR70N | 7478A03L25 | 747800-003 | |
| 8 | 2 | | SH. BRL. 8 | 7468 | 2800 | 55.0 | 9029.3 | 18058.6 | SA516GR70N | 7478A03L24 | 747800-003 | |
| 7 | 2 | | SH. BRL. 7 | 7468 | 2288 | 55.0 | 7381.4 | 14762.8 | SA516GR70N | 7478A03L23 | 747800-003 | |
| 6 | 2 | | SH. BRL. 6 | 7468 | 2611 | 53.0 | 8110.4 | 16220.8 | SA516GR70N | 7478A03L12 | 747800-003 | |
| 5 | 2 | | SH. BRL. 5 | 7468 | 2113 | 53.0 | 6563.3 | 13127.0 | SA516GR70N | 7478A03L13 | 747800-003 | |
| 4 | 2 | | SH. BRL. 4 | 7468 | 2900 | 53.0 | 9008.1 | 18016.2 | SA516GR70N | 7478A03L14 | 747800-003 | |
| 3 | 2 | | SH. BRL. 3 | 7468 | 3050 | 53.0 | 9474.6 | 18948.0 | SA516GR70N | 7478A03L17 | 747800-003 | |
| 2 | 2 | | SH. BRL. 2 | 7468 | 3000 | 54.0 | 9497.1 | 18994.2 | SA516GR70N | 7478A03L22 | 747800-003 | |
| 1 | 2 | | SH. BRL. 1 | 7468 | 2990 | 54.0 | 9465.4 | 18931.8 | SA516GR70N | 7478A03L22 | 747800-003 | |

LIST OF MATERIAL

MATERIAL OF CONSTRUCTION

| | |
|---|---|
| ⊙ 4.5 THK SPIRAL WOUND (SS 304) GRAPHITE FILLED WITH INNER RING (SS 304) & OUTER RING (C.S.) | |
| NAME PLATE BRACKET / NAME PLATE | SS 304 |
| EARTH LUG | SS 304 |
| FASTENERS | SA 193 GR.B7/SA 194 GR.2H |
| GASKETS | ⊙ |
| FLANGES (FORGINGS) | SA 350 GR.LF2 CL2 |
| FITTINGS (INTERNAL/ EXTERNAL) | SA 234 GR.WPB |
| PIPE | SA 106 GR.B |
| INTERNALS (ONLY B.S.H.I.'S SCOPE) | SA 516 GR.70N/ SA 106 GR.B |
| CATALYST SUPPORT GRID/ CATALYST HOLD DOWN GRID | SA 36/ BOLTING : SS304 |
| INTERNAL BOLT/ NUT | SS 304 |
| INTERNAL DISTRIBUTOR FOR NOZZLE 22 | INT. FLANGE : SA 105N; INT. GASKET : NON ASBESTOS (GASKET MATERIAL TO BE SUITABLE FOR BENZENE-STYRENE SERVICE). |
| INTERNAL DISTRIBUTOR FOR NOZZLE 12 | INT. FLANGE : SA 105N/SA 182 GR.F304; PIPE : SA312 TP 304 END PLATE : SA 240 GR.304; INT. GASKET : NON ASBESTOS (GASKET MATERIAL TO BE SUITABLE FOR BENZENE-STYRENE SERVICE). |
| NOZZLES/ MANHOLES | SA 516 GR.70N/SA 106 GR.B/SA 350 GR.LF2 CL2 |

FOR SR NOZZLES LIST OF MATERIAL REFER DWG. DA-7478-02-005

TOTAL WT. = 358758.0 Kgs.

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( — ) |
| RESUBMISSION DATE : | ( — ) |
| RESPONSIBLE DEPT./PERSON : | (BPD)/ VK |
| Review Date : | 06.MAR.'1 |

A : Approved Without Comment; B: Approved Revised
R : Resubmit Incorporating comments; F: Not Satisfied to

Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of its responsibilities and duty under the contract.

| JGC DWG. No. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|
| | V - 2151-101-A - 027 - 01 | | |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 4 | 23.02.'06 | REVISED AS MARKED ⚠ & 'AS BUILT' | PRATAP | HUSAIN | VS |
| 3 | 10.08.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠ | RAVI | [illegible] | VINCENT |
| 2 | 09.05.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠ & ISSUED FOR CONSTRUCTION | RAJU | [illegible] | VINCENT |
| 1 | 19.01.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠ & ISSUED FOR REAPPROVAL | RAVI | [illegible] | VINCENT |
| 0 | 30.10.'04 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | RAVI | VENKATESAN SUDHIR | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

SCALE: 1 : 110

CLIENT: JGC CORPORATION, JAPAN

ORDER: 0-3515-P-2151-101-A

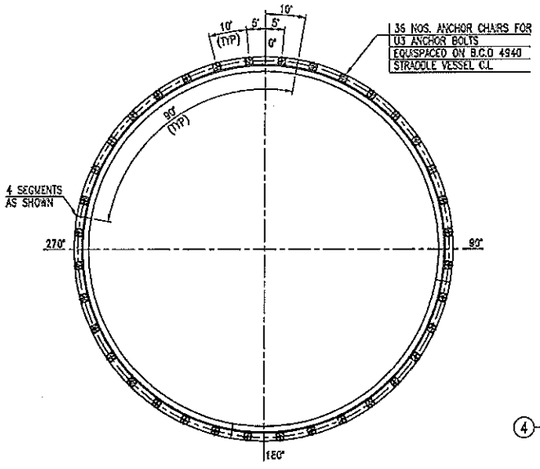
APPROVED FOR CONSTRUCTION BY..... VINCENT DATE... 09.05.'05

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA.

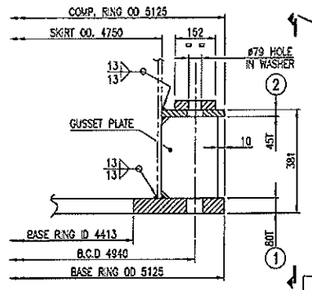
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
GENERAL ARRANGEMENT

DRAWING NO. DA-7478-02-001 SHEET 1 OF 2

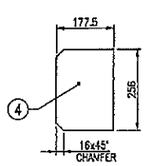
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLO



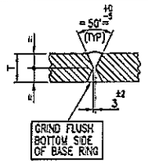

ORIENTATION OF ANCHOR CHAIR & COMP. / BASE RING SEGMENTS



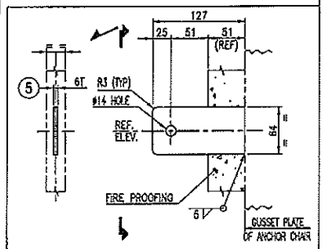

DETAIL OF ANCHOR CHAIR



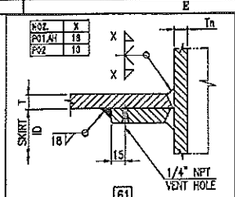

DETAIL OF GUSSET PLATE



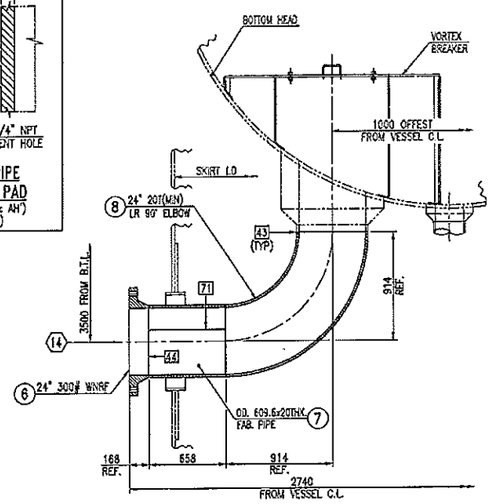

TYP. COMP./BASE RING SEGMENT WELD DETAIL



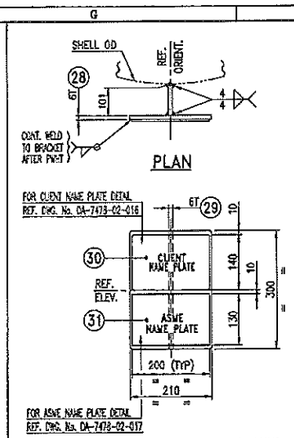

DETAIL OF EARTHING LUG



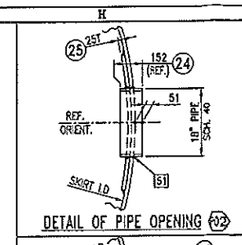

61
WELD DETAIL OF PIPE OPENING WITH R.F. PAD
(FOR NOZZLES 'P01, P02 & AH') (ONLY FOR FILLET SIZE)



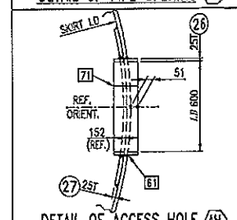

DETAIL OF NOZZLE (14) (24" - #300 WNRF)



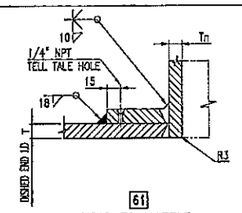

DETAIL OF NAME PLATE BRACKET



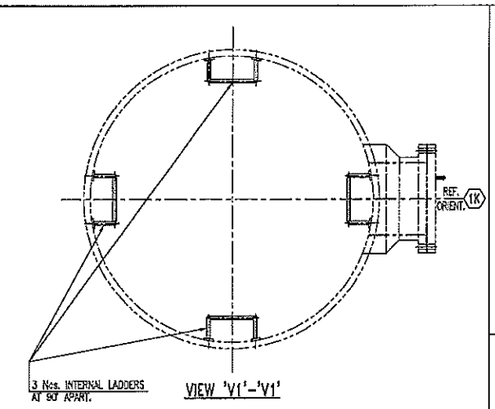

DETAIL OF PIPE OPENING (02)



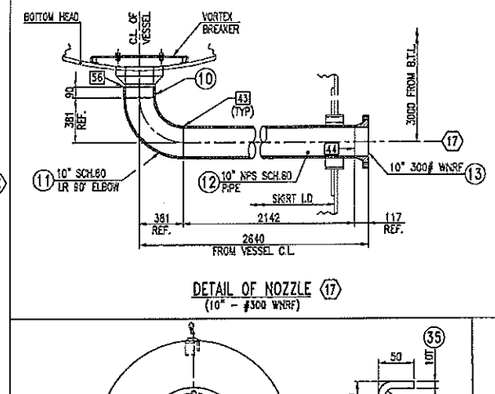

DETAIL OF ACCESS HOLE (AH)



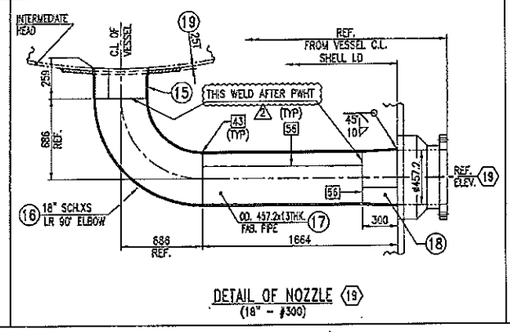

61
HEAD TO NOZZLE WELD WITH R.F. PAD
(FOR NOZZLES '19') (ONLY FOR FILLET SIZE)



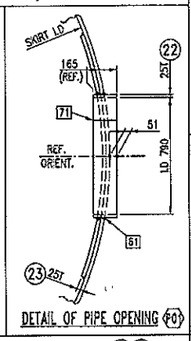

VIEW 'V1'-'V1'



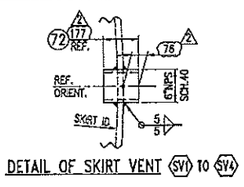

DETAIL OF NOZZLE (17) (10" - #300 WNRF)



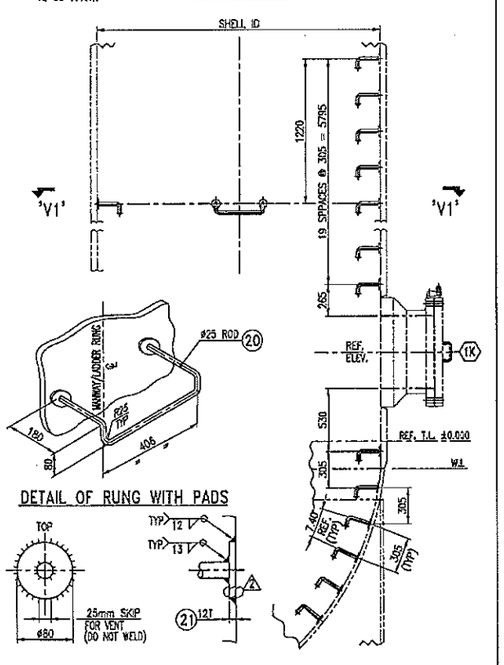

DETAIL OF NOZZLE (19) (18" - #300)




DETAIL OF PIPE OPENING (F0)




DETAIL OF SKIRT VENT (SV1) TO (SV4)

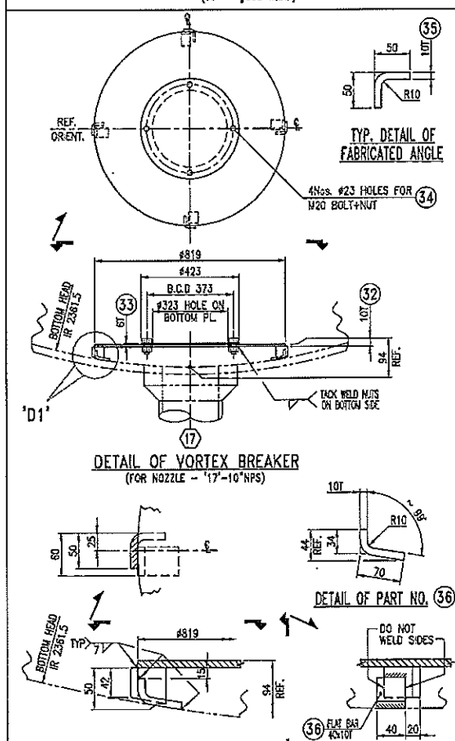



DETAIL OF RUNG WITH PADS

DETAIL OF INTERNAL LADDER RUNGS



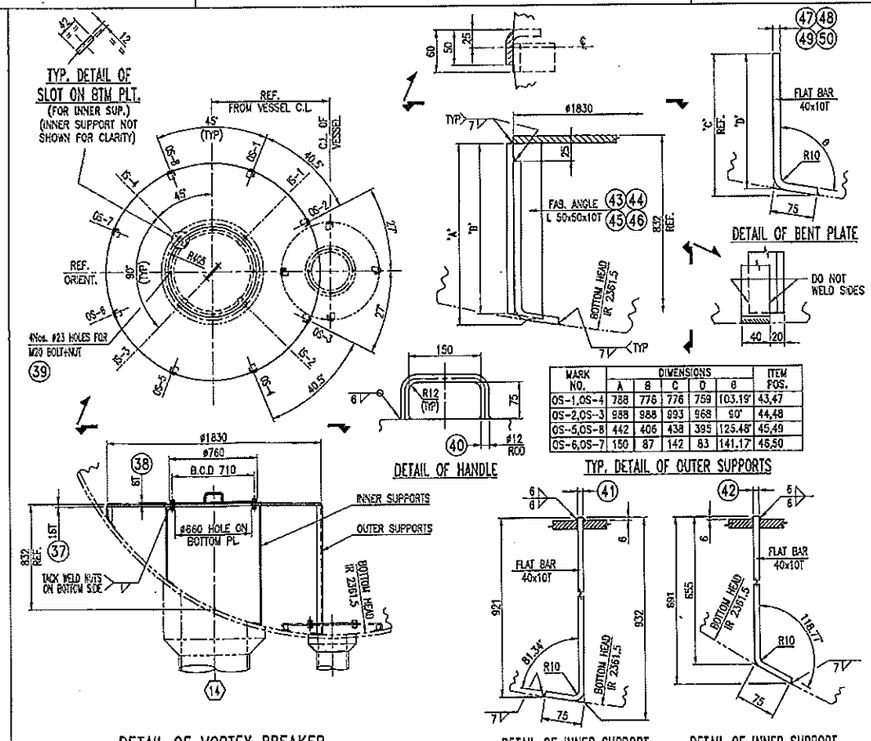

DETAIL OF RUNG PAD




DETAIL OF VORTEX BREAKER (FOR NOZZLE - '17'-10"NPS)

DETAIL OF PART NO. (36)

DETAIL-'D1'




| MARK NO. | DIMENSIONS A | B | C | D | θ | ITEM POS. |
|---|---|---|---|---|---|---|
| OS-1,OS-4 | 788 | 776 | 776 | 759 | 103.19° | 43,47 |
| OS-2,OS-3 | 988 | 988 | 893 | 968 | 90° | 44,48 |
| OS-5,OS-8 | 442 | 406 | 438 | 395 | 125.48° | 45,49 |
| OS-6,OS-7 | 150 | 87 | 142 | 83 | 141.17° | 46,50 |

NOTE:-

1). FOR NOZZLE TO SHELL/ HEAD WELD DETAIL REFER GENERAL ARRANGEMENT DWG. No. DA-7478-02-001.

2). SUITABLE PACKING SHALL BE PROVIDED BETWEEN NOZZLE PIPE O.D & PIPE OPENING IN SKIRT FOR NOZZLES COMING OUT OF SKIRT TO AVOID ANY DAMAGE DURING TRANSPORTATION.

| | |
|---|---|
| JCP Project (JOB No. : 0-3515-20) | |
| ISSUE PURPOSE : | A9 |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EPP) 24 06 FEB.'19 |
| Review Data : A : Approved without Comment; B: Approved/Reviewed R : Resubmit incorporating comments; F: Not Subject to | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Sub-contractor of his responsibilities and liability under the contract. | |
| JOB DOC. NO. ORIG. PURCHASE ORDER No. V – 2151-101-A – 028 – 00 SERIAL REV. | |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 2 | 19.12.'05 | REVISED AS MARKED & 'AS BUILT' | RAJU | MURALI | SP |
| 1 | 06.04.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED & ISSUED FOR CONSTRUCTION | RAJU | JAP/BPP | VINCENT |
| 0 | 19.01.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | RAJU | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليلي السعودية

| | |
|---|---|
| SCALE: | 1 : 25 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE.. | 06.04.'05 |

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
DETAIL DRAWING

DRAWING NO. DA-7478-02-002 SHEET 1 OF 2

الاحق لأحد القيام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو استخدامها لأي غرض إلا بالحصول على موافقة خطية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

AS BUILT 17-FEB-2005

| SP | VINCENT | APP'D |
|---|---|---|
| HUSAIN | JAP/BPP | CHK'D |
| KIRIT | RAJU | DRAWN |

**BILFAL**
HEAVY INDUSTRIES Ltd.
FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

JCP PROJECT
JUBAIL CHEVRON PHILLIPS COMPANY
ALKYLATOR (R-3201)
FORMED HEAD (TOP)

| REV. | DRAWING NO. |
|---|---|
| 3 | DA-7478-02-003 |

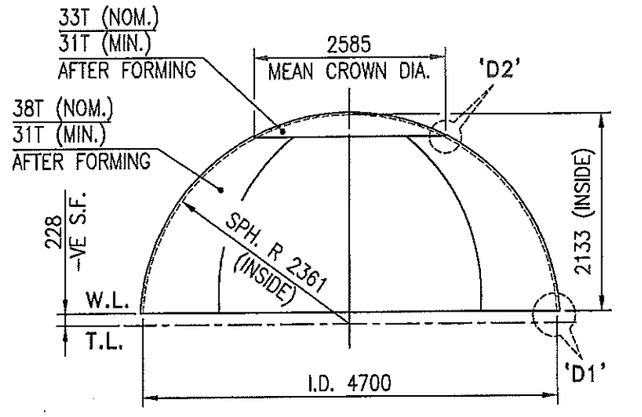
VESSEL [x]
TANK [ ]
HEAT EXCHANGER [ ]

TO BE WELDED TO,

FLANGE [ ]
SHELL FROM PIPE [ ]
SHELL FROM PLATE [x]

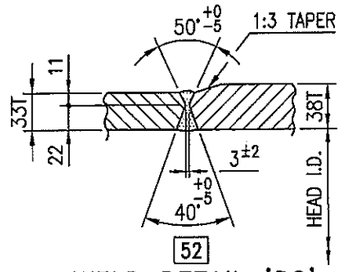
TYPE :-

HEMISPHERICAL [x]




CONSTRUCTION :-

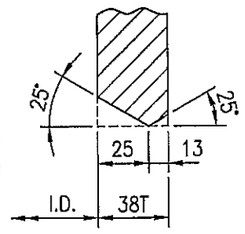
1. ONE CROWN & 8 PETALS
2. CROWN BLANK DIA = 2733
3. ALLOWANCE TO BE ADDED IN CROWN BLANK DIA. FOR MANUFACTURING.
4. FOR ORIENTATION OF PETALS REF. DWG. No. DA-7478-02-001




WELD DETAIL 'D2'

CROWN DISC WITHOUT WELD [x]
CROWN DISC WELDED [ ]
HOT FORMED [ ]
COLD FORMED [x]
PENETRATING TEST [x]
PRODUCTION TEST PIECES WITH FINAL FORMING [ ]
TEMPERATURE > AC3 [ ]

* FOR PETALS - 7446A02L41
FOR CROWN - 7478A03L09




DETAIL : 'D1'

MATERIAL OF OUR SUPPLY :-

| | | | |
|---|---|---|---|
| QUALITY | SA516 Gr.70N | NO. OF PIECES | ONE |
| MATERIAL CODE | * | DIMENSIONAL CHECK | AS PER CODE |
| INSPECTION | BSHI/CLIENT/AI | HEAT TREATING | SEE NOTE - b |
| THK.(BEFORE FORMING) | 38/33 | X-RAY | FULL (RT1) |
| DISC DIAMETER | CROWN & PETALS | DELIVERY (FOR MACH.) | BSHI SHOP |
| DELIVERY(FOR FORMING) | BSHI SHOP | | |

NOTES :- a) CODE OF CONSTRUCTION & INSPECTION = ASME SEC. VIII DIV. 1 ED. 2001, 2003 ADD.
b) %FIBRE ELONGATION = 1.2 WHICH IS LESS THAN 5% HENCE STRESS RELIEVING AFTER FORMING IS NOT REQUIRED.

MARK 7478-02 (TOP) WITH WHITE PAINT ON HEAD

FILE NAME : S747802003

| REV. | DATE | DESCRIPTION |
|---|---|---|
| 3 | 19.12.'05 | 'AS BUILT' |
| 2 | 02.05.'05 | REVISED AS MARKED /2 |
| 1 | 19.01.'05 | REVISED AS MARKED /1 & ISSUED FOR CONSTRUCTION |
| 0 | 30.10.2004 | ISSUED FOR APPROVAL & INTERNAL COMMENTS |

| VENDOR'S NAME | : | BELLELI SAUDI HEAVY IND. LTD. |
|---|---|---|
| COMPANY'S NAME | : | JUBAIL CHEVRON PHILLIPS COMPANY |
| PURCHASER'S NAME | : | JGC CORPORATION |
| PROJECT NAME | : | JCP PROJECT |
| PLANT LOCATION | : | AL JUBAIL, SAUDI ARABIA |
| P. O. NO. | : | 0-3515-P-2151-101-A |
| VENDOR'S DOC. NO. | : | DA-7478-02-003 |
| DOCUMENT TITLE | : | FORMED HEAD (TOP) |
| EQUIPMENT/MATERIAL NAME | : | ALKYLATOR |
| ITEM No. | : | R-3201 |

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( - ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP ) |
| Review Date : | ('06 FEB) '17 |
| A : Approved without Comment; B: Approved/Reviewed R : Resubmit incorporating comments; F: Not Subject to | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract. | |

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | 2151-101-A | 029 | 00 |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

INDRA 17-FEB-2006 'AS BUILT'

| REV. | DATE | DESCRIPTION | APP'D | CHK'D | DRAWN |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | "AS BUILT" REVISED AS MARKED & ISSUED FOR FINAL APPROVAL | SP | JAP | KIRIT |
| 2 | 27.10.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | VINCENT | VENKATESAN BIBHU | PRASAD |
| 1 | 19.01.'05 | REVISED AS MARKED & ISSUED FOR CONSTRUCTION | VINCENT | JAP/BPP | KIRIT |
| 0 | 30.10.2004 | | SP | HUSAIN | |

**BILFAL** HEAVY INDUSTRIES Ltd.

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

JCP PROJECT
JUBAIL CHEVRON PHILLIPS COMPANY
ALKYLATOR (R-3201)
FORMED HEAD (BOTTOM)

| REV. | DRAWING NO. |
|---|---|
| 3 | DA-7478-02-004 |

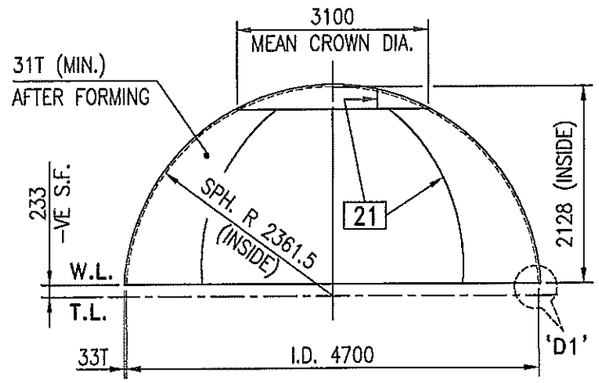
VESSEL [x]
TANK [ ]
HEAT EXCHANGER [ ]

TO BE WELDED TO,

FLANGE [ ]
SHELL FROM PIPE [ ]
SHELL FROM PLATE [x]

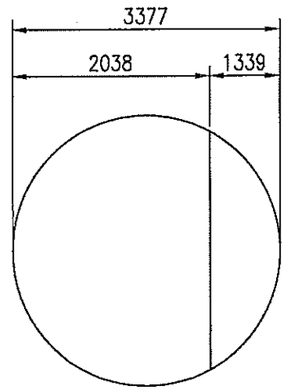
TYPE :-

HEMISPHERICAL [x]

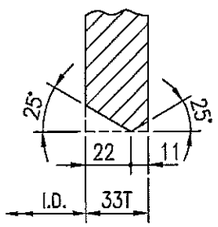



CONSTRUCTION :-

1. ONE CROWN & 8 PETALS
2. CROWN BLANK DIA = 3377
3. ALLOWANCE TO BE ADDED IN CROWN BLANK DIA. FOR MANUFACTURING.
4. FOR ORIENTATION OF PETALS REF. DWG. No. DA-7478-02-001




CROWN SPLICE DETAIL




DETAIL : 'D1'

| | | | |
|---|---|---|---|
| CROWN DISC WITHOUT WELD | [ ] | | |
| CROWN DISC WELDED | [x] | | |
| HOT FORMED | [ ] | | |
| COLD FORMED | [x] | | |
| PENETRATING TEST | [x] | | |
| PRODUCTION TEST PIECES WITH FINAL FORMING | [ ] | | |
| TEMPERATURE > AC3 | [ ] | | |

MATERIAL OF OUR SUPPLY :-

| | | | |
|---|---|---|---|
| QUALITY | SA516 Gr.70N | NO. OF PIECES | ONE |
| MATERIAL CODE | 7478A03L08,L10 | DIMENSIONAL CHECK | AS PER CODE |
| INSPECTION | BSHI/CLIENT/AI | HEAT TREATING | SEE NOTE - b |
| THK.(BEFORE FORMING) | 33 | X-RAY | FULL (RT1) |
| DISC DIAMETER | CROWN & PETALS | DELIVERY (FOR MACH.) | BSHI SHOP |
| DELIVERY(FOR FORMING) | BSHI SHOP | | |

NOTES :- a) CODE OF CONSTRUCTION & INSPECTION = ASME SEC. VIII DIV. 1 ED. 2001, 2003 ADD.
b) % FIBRE ELONGATION = 0.98 WHICH IS LESS THAN 5% HENCE STRESS RELIEVING AFTER FORMING IS NOT REQUIRED.

MARK 7478-02 (BOTTOM) WITH WHITE PAINT ON HEAD

FILE NAME : S747802004

| | |
|---|---|
| VENDOR'S NAME | : BILFAL HEAVY IND. LTD. |
| COMPANY'S NAME | : JUBAIL CHEVRON PHILLIPS COMPANY |
| PURCHASER'S NAME | : JGC CORPORATION |
| PROJECT NAME | : JCP PROJECT |
| PLANT LOCATION | : AL JUBAIL, SAUDI ARABIA |
| P. O. NO. | : 0-3515-P-2151-101-A |
| VENDOR'S DOC. NO. | : DA-7478-02-004 |
| DOCUMENT TITLE | : FORMED HEAD (BOTTOM) |
| EQUIPMENT/MATERIAL NAME | : ALKYLATOR |
| ITEM No. | : R-3201 |

| JCP Project (JOB No. : 0-3515-20) | | | |
|---|---|---|---|
| ISSUE PURPOSE : | AB | | |
| RESULT CODE : A, B, R, F | ( A ) | | |
| NEXT STATUS : FA, FI, FR, FC | ( - ) | | |
| RESUBMISSION DATE : | ( ) | | |
| RESPONSIBLE DEPT./PERSON : | (EQP ) | | |
| Review Date : | ('06FEB)17 | | |
| A : Approved without Comment; B: Approved/Reviewed R : Resubmit incorporating comments; F: Not Subject to | | | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract. | | | |
| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL REV. |
| | V | - 2151-101-A | - 030 - 00 |

BILFAL HEAVY INDUSTRIES Ltd.

AS BUILT

CERTIFIED BY.....

INDRA 17-FEB-2006 AS BUILT

| APP'D | CHK'D | DRAWN | DESCRIPTION | DATE | REV. |
|---|---|---|---|---|---|
| SP | JAP | KIRIT | `AS BUILT' | 06.12.'05 | 3 |
| SP | JAP | KIRIT | REVISED AS MARKED ⚠& ISSUED FOR FINAL APPPROVAL | 27.10.'05 | 2 |
| SP | JAP | KIRIT | ISSUED FOR APPROVAL & INTERNAL COMMENTS | 19.01.'05 | 1 |
| SP | JAP | KIRIT | ISSUED FOR CONSTRUCTION | 30.10.2004 | 0 |

**BILFAL** HEAVY INDUSTRIES Ltd.

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

JCP PROJECT
JUBAIL CHEVRON PHILLIPS COMPANY
ALKYLATOR (R-3201)
FORMED HEAD (INTERMEDIATE)

| REV. | DRAWING NO. |
|---|---|
| 3 | DA-7478-02-005 |

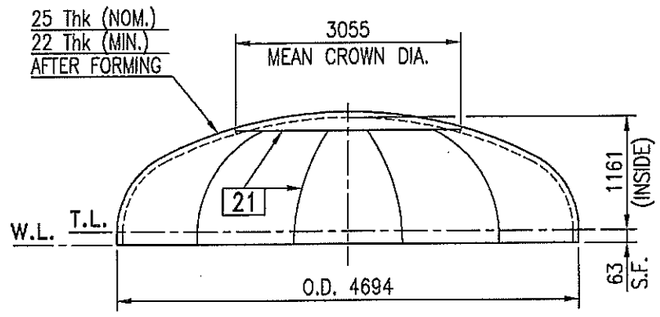
VESSEL [X]
TANK [ ]
HEAT EXCHANGER [ ]

TO BE WELDED TO,

FLANGE [ ]
SHELL FROM PIPE [ ]
SHELL FROM PLATE [X]

TYPE :-

ELLIPTICAL 2:1 [X]




CONSTRUCTION :-

1. ONE CROWN & 8 PETALS CROWN BLANK DIA.=3128
2. ALLOWANCE TO BE ADDED IN CROWN BLANK DIA. FOR MANUFACTURING.
3. FOR ORIENTATION OF PETALS REF. DWG. No. DA-7478-02-001

CROWN DISC WITHOUT WELD [X]
CROWN DISC WELDED [ ]
HOT FORMED [ ]
COLD FORMED [X]
PENETRATING TEST [X]
PRODUCTION TEST PIECES WITH FINAL FORMING [ ]
TEMPERATURE > AC3 [ ]

MATERIAL OF OUR SUPPLY :-

| | | | |
|---|---|---|---|
| QUALITY | SA516 Gr.70N | NO. OF PIECES | ONE |
| MATERIAL CODE | 7478A03L06,L07 | DIMENSIONAL CHECK | AS PER CODE |
| INSPECTION | BSHI/CLIENT/AI | HEAT TREATING | SEE NOTE - b |
| THK.(BEFORE FORMING) | 25 | X-RAY | FULL (RT1) |
| DISC DIAMETER | CROWN & PETALS | DELIVERY (FOR MACH.) | BSHI SHOP |
| DELIVERY(FOR FORMING) | BSHI SHOP | | |

NOTES :- a) CODE OF CONSTRUCTION & INSPECTION = ASME SEC. VIII DIV. 1 ED. 2001, 2003 ADD.
b) % FIBRE ELONGATION = 2.31 WHICH IS LESS THAN 5% HENCE STRESS RELIEVING AFTER FORMING IS NOT REQUIRED.
c) HEAD OUTER DIAMETER TO BE MAINTAINED AS 4694mm, SINCE THIS IS A INTERNAL HEAD AND TO BE INSERTED THROUGH 4700mm DIA SHELL.

MARK 7478-02 (INTERMEDIATE) WITH WHITE PAINT ON HEAD

FILE NAME : S747802005

| | |
|---|---|
| VENDOR'S NAME | : BILFAL HEAVY IND. LTD. |
| COMPANY'S NAME | : JUBAIL CHEVRON PHILLIPS COMPANY |
| PURCHASER'S NAME | : JGC CORPORATION |
| PROJECT NAME | : JCP PROJECT |
| PLANT LOCATION | : AL JUBAIL, SAUDI ARABIA |
| P. O. NO. | : 0-3515-P-2151-101-A |
| VENDOR'S DOC. NO. | : DA-7478-02-005 |
| DOCUMENT TITLE | : FORMED HEAD (INTERMEDIATE) |
| EQUIPMENT/MATERIAL NAME | : ALKYLATOR |
| ITEM No. | : R-3201 |

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( - ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP ) |
| Review Date : | ('06 FEB 17 |
| A : Approved without Comment; B: Approved/Reviewed<br>R : Resubmit incorporating comments; F: Not Subject to | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract. | |

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | - 2151-101-A | - 031 | - 00 |

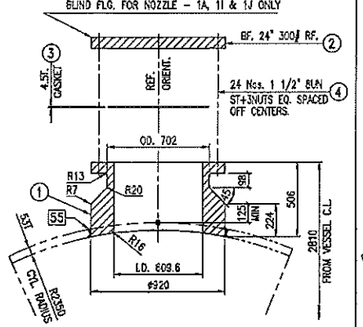
BILFAL HEAVY INDUSTRIES Ltd.

AS BUILT

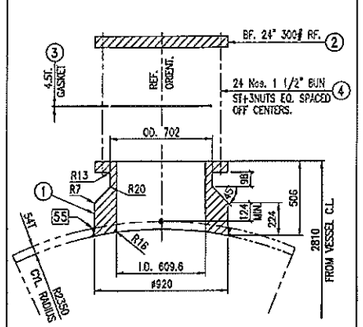
CERTIFIED BY.....

INDRA 17-FEB-2006 AS BUILT

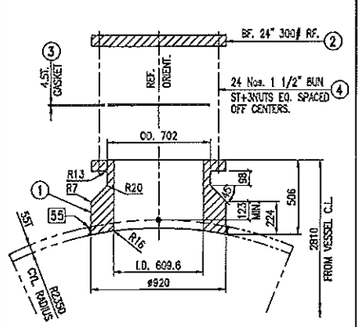
BLIND FLG. FOR NOZZLE – 1A, 1I & 1J ONLY



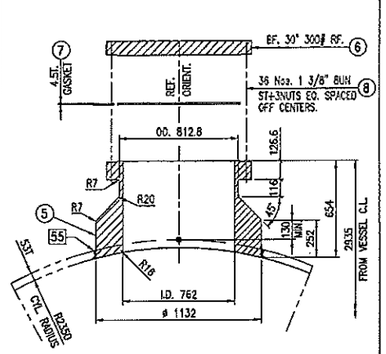

DETAIL OF NOZZLE 1A 1I 1J 1S
(24"–300#)



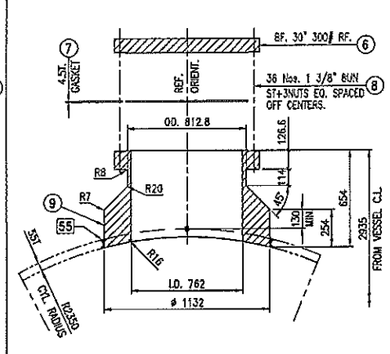

DETAIL OF NOZZLE 1B TO 1F 1K
(24"–300#)




DETAIL OF NOZZLE 1G 1H
(24"–300#)




DETAIL OF NOZZLE 2A
(30"–300#)



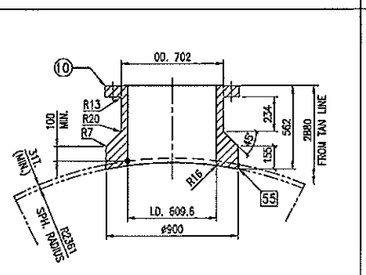

DETAIL OF NOZZLE 2B
(30"–300#)

NOTES :-

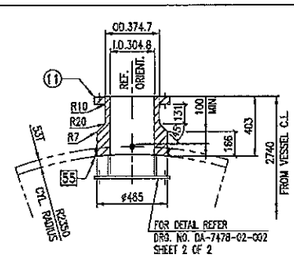
1) FOR FORGING TO SHELL WELD DETAIL, REFER GA DRG. DA-7478-02-001
2) ALL FLANGE DIMENSIONS SHALL BE AS PER ASME B16.5 (UPTO 24" NPS) UNLESS OTHERWISE SPECIFIED.
3) ALL FLANGE DIMENSIONS ABOVE 24" NPS (NOZZLES-2A & 2B) SHALL BE AS PER ASME B16.47 SR. B EXCEPT THICKNESS UNLESS OTHERWISE SPECIFIED.

●● SA 193 Gr. B7 / SA 194 Gr. 2H
● 4.5 THK. SPIRAL WOUND (SS 304) GRAPHITE FILLED WITH INNER RING (SS 304) & OUTER RING (C.S.)

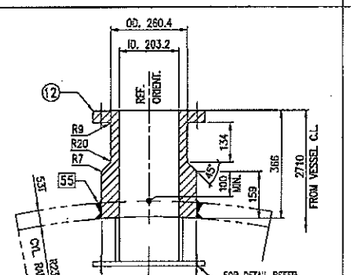
TOTAL WT. = 30200.3 Kgs.



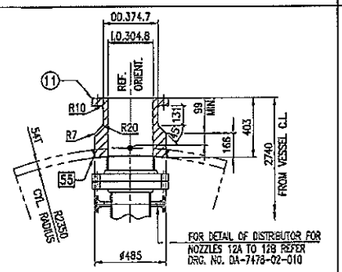

DETAIL OF NOZZLE 7
(24"–300#)



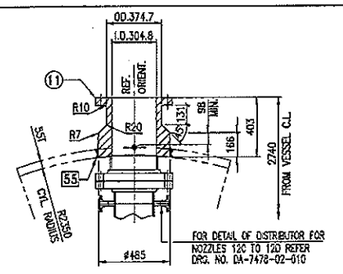

DETAIL OF NOZZLE 10 13 18
(12"–300#)




DETAIL OF NOZZLE 1A 1B
(8"–300#)



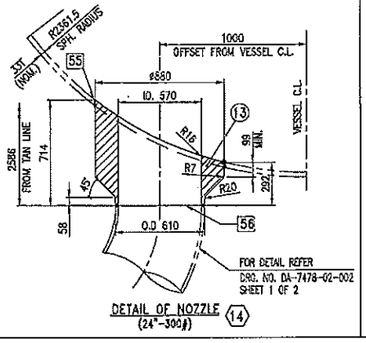

DETAIL OF NOZZLE 2A 2B
(12"–300#)



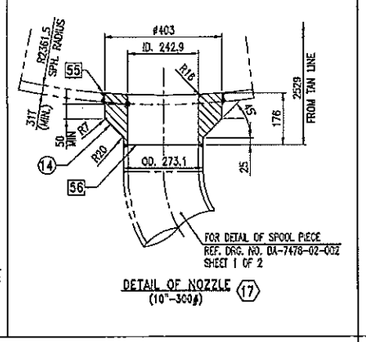

DETAIL OF NOZZLE 2C 2D
(12"–300#)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | 26 | ST+2NT 3/4" UNC | 90 | 0 | 0.0 | 0.0 | 0.0 | B8 | | 7478A41B01 | 747600-041 | 2#2 SPARE |
| A | 29 | 18 | GK. 1-1/2" 300# RF | 0 | 0 | 0.0 | 00.0 | 00.0 | B | | 7478AA2G01 | 747600-042 | 3#2 SPARE |
| A | 28 | 6 | BF. 1-1/2" 300# RF | 0 | 0 | 0.0 | 3.6 | 21.6 | SA350 GRLF2 CL2 | | 7478AA40F01 | 747600-040 | 82A-B,83A-D |
| | 27 | 6 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 10.1 | 60.6 | SA350 GRLF2 CL2 | | 7478A39F02 | 747600-039 | 45A-B,49A-D |
| | 26 | 9 | ST+2NT 5/8" UNC | 90 | 0 | 0.0 | 0.0 | 0.0 | B8 | | 7478A41B02 | 747600-041 | 6#1 SPARE |
| | 25 | 3 | GK. 2" 300# RF | 0 | 0 | 0.0 | 00.0 | 00.0 | B | | 7478AA2G02 | 747600-042 | 1#2 SPARE |
| | 24 | 1 | BF. 2" 300# RF | 0 | 0 | 0.0 | 4.0 | 4.0 | SA350 GRLF2 CL2 | | 7478AA40F02 | 747600-040 | 91 |
| | 23 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 14.7 | 14.7 | SA350 GRLF2 CL2 | | 7478A39F01 | 747600-039 | 38C |
| | 22 | 7 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 10.1 | 70.7 | SA350 GRLF2 CL2 | | 7478A24F08 | 747600-024 | |
| | 21 | 15 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 10.1 | 151.5 | SA350 GRLF2 CL2 | | 7478A24F06 | 747600-024 | |
| | 20 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 15.0 | 15.0 | SA350 GRLF2 CL2 | | 7478A24F05 | 747600-024 | |
| | 19 | 16 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 14.7 | 235.2 | SA350 GRLF2 CL2 | | 7478A24F04 | 747600-024 | |
| | 18 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 41.0 | 41.0 | SA350 GRLF2 CL2 | | 7478A04F09 | 747600-004 | 41 |
| | 17 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 723.0 | 723.0 | SA350 GRLF2 CL2 | | 7478A04F08 | 747600-004 | 22 |
| | 16 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 713.0 | 713.0 | SA350 GRLF2 CL2 | | 7478A04F07 | 747600-004 | 21 |
| | 15 | 2 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 568.0 | 1136.0 | SA350 GRLF2 CL2 | | 7478A04F06 | 747600-004 | 19, 20 |
| | 14 | 1 | FF (SEE DETAIL) | 0 | 0 | 0.0 | 78.0 | 78.0 | SA350 GRLF2 CL2 | | 7478A04F12 | 747600-004 | 17 |
| | 13 | 1 | FF (SEE DETAIL) | 0 | 0 | 0.0 | 1008.0 | 1008.0 | SA350 GRLF2 CL2 | | 7478A04F11 | 747600-004 | 16 |
| | 12 | 2 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 118.0 | 236.0 | SA350 GRLF2 CL2 | | 7478A04F05 | 747600-004 | 11A & 11B |
| | 11 | 7 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 256.0 | 1852.0 | SA350 GRLF2 CL2 | | 7478A04F04 | 747600-004 | 4,CH-D,11 &12 |
| | 10 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 938.0 | 938.0 | SA350 GRLF2 CL2 | | 7478A04F10 | 747600-004 | 07 |
| | 9 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 1736.0 | 1736.0 | SA350 GRLF2 CL2 | | 7478A04F03 | 747600-004 | 23 |
| | 8 | 76 | ST+3NT 1 3/8" BUN | 310 | 0 | 0.0 | 3.5 | 265.0 | B8 | | 7478A15B02 | 747600-015 | 72#4 SPARE |
| | 7 | 8 | GK. 30" 300# RF | 0 | 0 | 0.0 | 00.0 | 00.0 | B | | 7478A16G11 | 747600-016 | 2#4 SPARE |
| | 6 | 2 | BF. 30" 300# RF | 0 | 0 | 0.0 | 537.0 | 1074.0 | SA350 GRLF2 CL2 | | 7478A05F09 | 747600-005 | |
| | 5 | 1 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 1735.0 | 1735.0 | SA350 GRLF2 CL2 | | 7478A04F02 | 747600-004 | 2A |
| | 4 | 278 | ST+3NT 1 1/2" BUN | 280 | 0 | 0.0 | 4.0 | 1112.0 | B8 | | 7478A15B03 | 747600-015 | 3#1,1#4 SPARE |
| | 3 | 33 | GK. 24" 300# RF | 0 | 0 | 0.0 | 00.0 | 00.0 | B | | 7478A16G10,11,12,13,14,15 | 747600-016 | 11+2 SPARE |
| | 2 | 11 | BF. 24" 300# RF | 0 | 0 | 0.0 | 342.0 | 3762.0 | SA350 GRLF2 CL2 | | 7478A05F08 | 747600-005 | |
| | 1 | 12 | INTEG. FORG.(SEE DETAIL) | 0 | 0 | 0.0 | 1695.0 | 31140.0 | SA350 GRLF2 CL2 | | 7478A04F01 | 747600-004 | 5A-1K & 15 |
| REF. | ITEM | POS. QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS | |

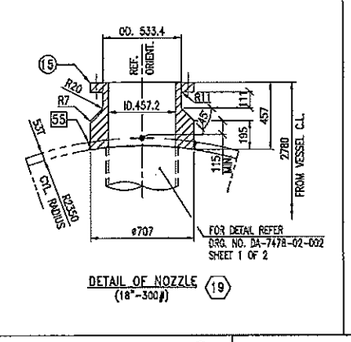
LIST OF MATERIAL



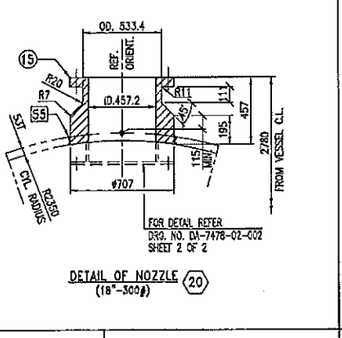

DETAIL OF NOZZLE 14
(24"–300#)



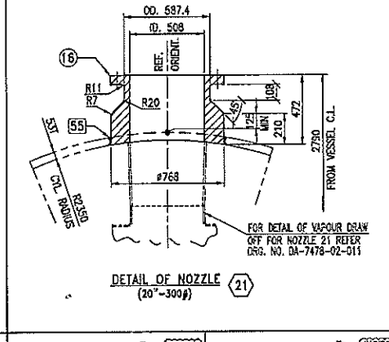

DETAIL OF NOZZLE 17
(10"–300#)



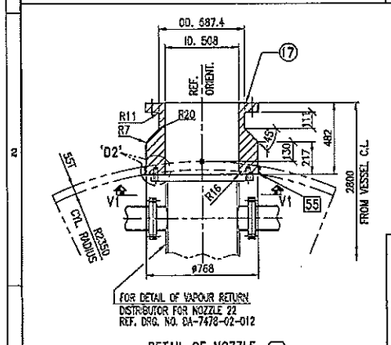

DETAIL OF NOZZLE 19
(18"–300#)




DETAIL OF NOZZLE 20
(18"–300#)

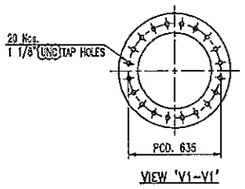



DETAIL OF NOZZLE 21
(20"–300#)

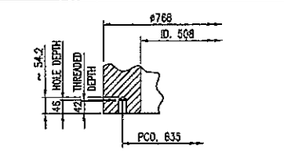



FOR DETAIL OF VAPOUR RETURN DISTRIBUTOR FOR NOZZLE 22 REF. DRG. NO. DA-7478-02-012

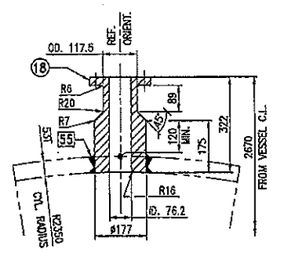
DETAIL OF NOZZLE 22
(20"–300#)



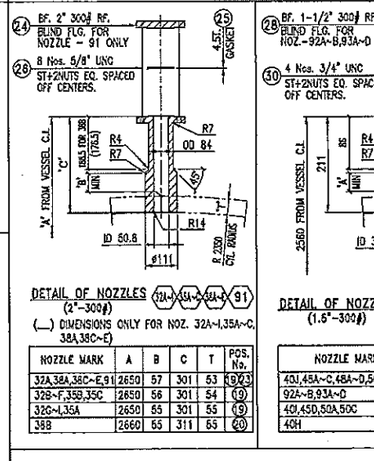

VIEW 'V1–V1'




DETAIL 'D2'



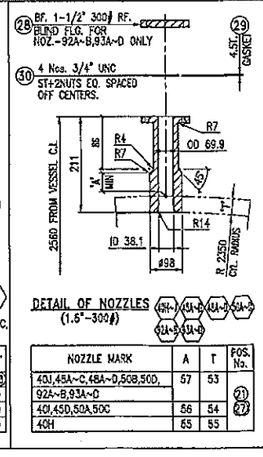

DETAIL OF NOZZLE 41
(3"–300#)




DETAIL OF NOZZLES 32A 35A 38A 91
(2"–300#)

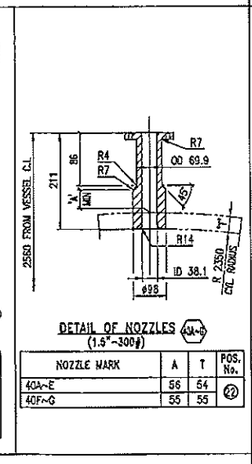
(__) DIMENSIONS ONLY FOR NOZ. 32A~I,35A~C, 38A,38C~E)

| NOZZLE MARK | A | B | C | T | POS. No. |
|---|---|---|---|---|---|
| 32A,38A,38C~E,91 | 2650 | 57 | 301 | 53 | 3 |
| 32B~F,35B,35C | 2650 | 56 | 301 | 54 | 19 |
| 32G~I,35A | 2650 | 55 | 301 | 55 | 19 |
| 38B | 2660 | 55 | 311 | 55 | 20 |



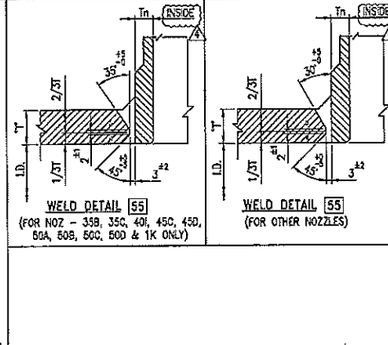

DETAIL OF NOZZLES 40I 45A~C 45B~D 50A~C 92A~B 93A~D
(1.5"–300#)

| NOZZLE MARK | A | T | POS. No. |
|---|---|---|---|
| 40I,45A~C,45B~D,50B,50D, 92A~B,93A~D | 57 | 53 | 21 |
| 40I,45D,50A,50C | 56 | 54 | 21 |
| 40H | 55 | 55 | |




DETAIL OF NOZZLES 45H
(1.5"–300#)

| NOZZLE MARK | A | T | POS. No. |
|---|---|---|---|
| 40A~E | 56 | 54 | 22 |
| 40F~G | 55 | 55 | |




JCP Project (JOB No. : 0-3515-20)

| | |
|---|---|
| ISSUE PURPOSE : | AS |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) |
| Review Date : | (06.FEB.11 |

A : Approved without Comment; B: Approved/Reviewed
R : Revise & Resubmitting comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A – 032 – | 00 | |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 4 | 19.12.'05 | REVISED AS MARKED A & 'AS BUILT' | KIRJT | RJSAN | SP |
| 3 | 10.08.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED A | KIRJT | JAP/SP | VINCENT |
| 2 | 08.04.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED A & ISSUED FOR CONSTRUCTION | Raju | JAP/BPP | VINCENT |
| 1 | 12.02.'05 | SR FORGING DETAILS ADDED FOR NOZZLES OF SIZE 2" & 1.5"-300# & ISSUED FOR REAPPROVAL | Ravi | JAP/BPP | VINCENT |
| 0 | 10.01.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | LAD | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليلي السعودية

SCALE: 1 : 20

CLIENT: JGC CORPORATION, JAPAN

ORDER: 0-3515-P-2151-101-A

APPROVED FOR CONSTRUCTION
BY.....VINCENT...
DATE..08.04.'05.

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

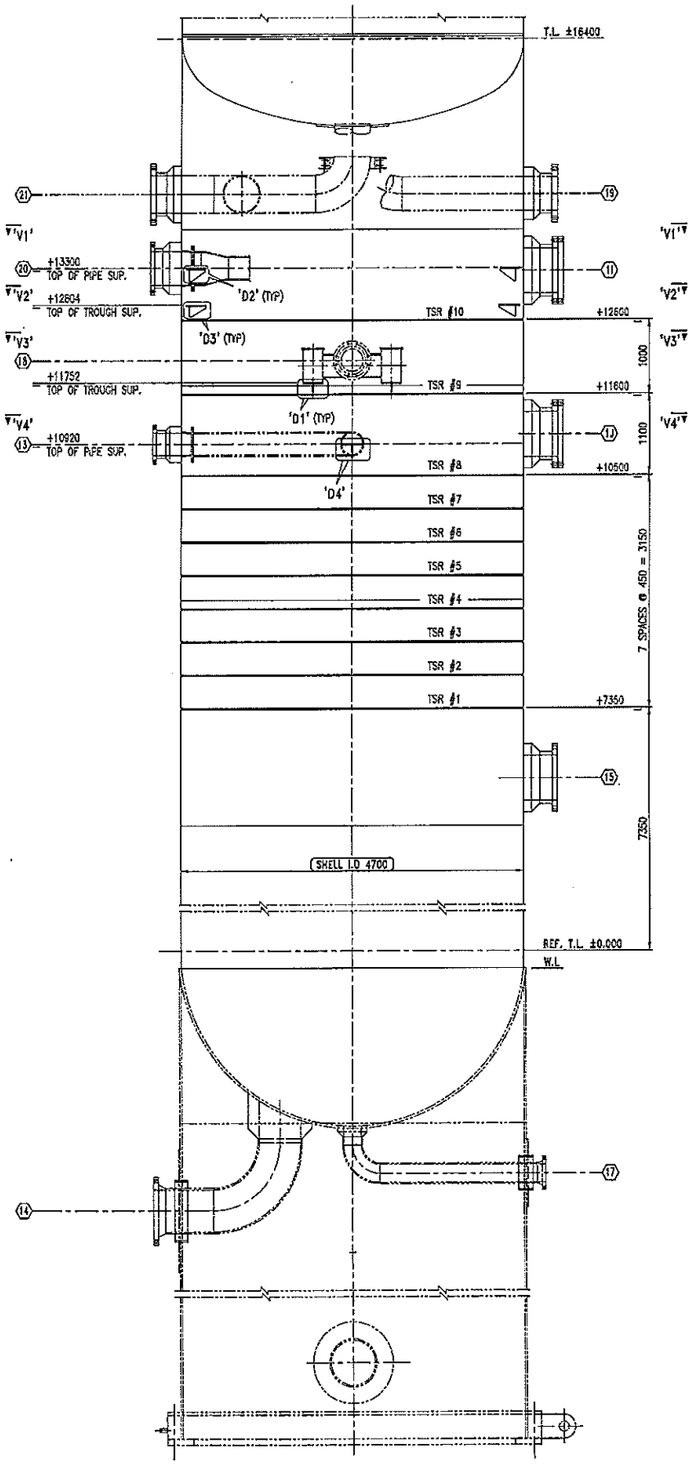
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
SRN FORGING DETAILS

DRAWING NO.
DA-7478-02-006
REV. 4

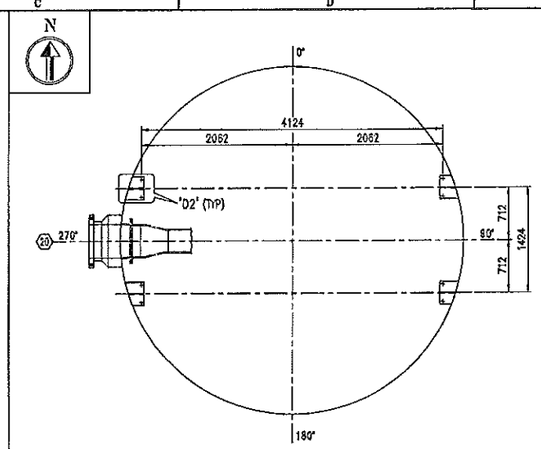

لايحق لأحد القيام بإلغاء هذا الرسم الهندسي كلياً أو جزئياً أو استغلاله أي غرض الإالحصول على موافقة خطية مسبقاً من شركة بلفال للصناعات الثقيلة السعودية.

THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

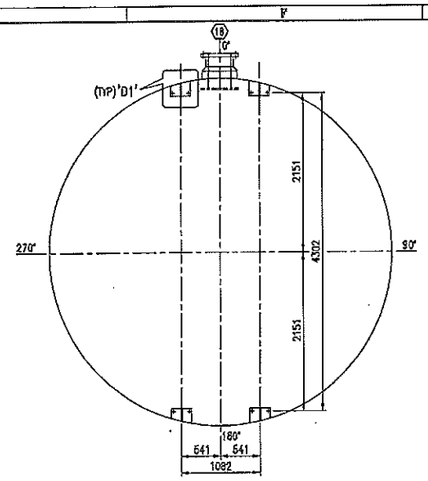

AS BUILT



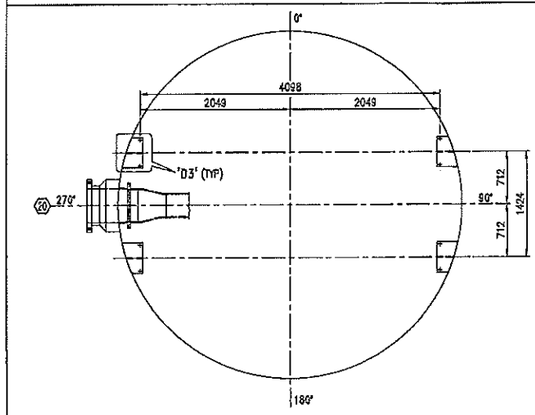

ELEVATION



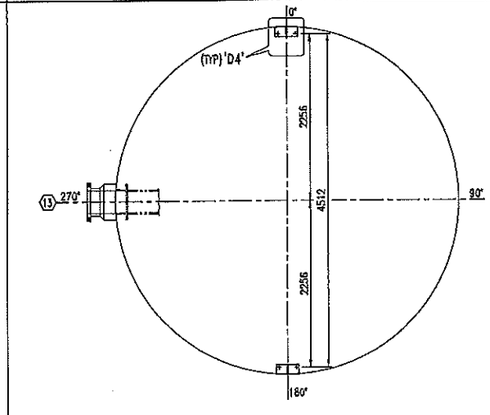

VIEW 'V1-V1'



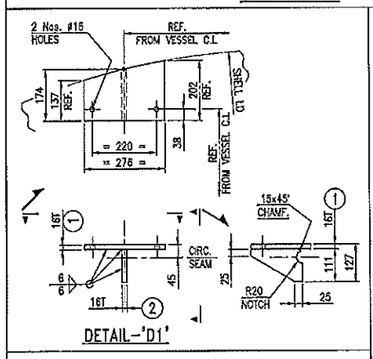

VIEW 'V3-V3'



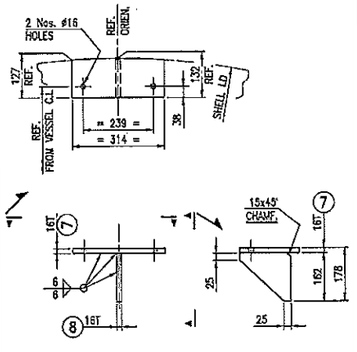

VIEW 'V2-V2'



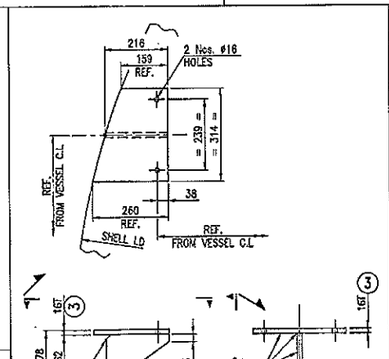

VIEW 'V4-V4'



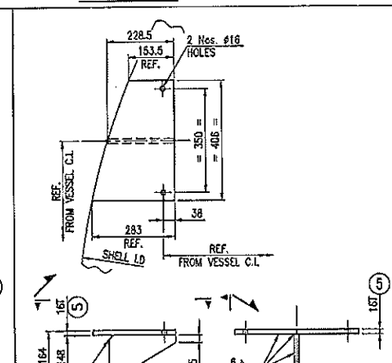

DETAIL-'D1'



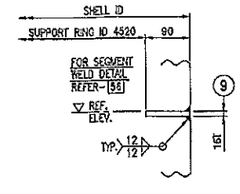

DETAIL-'D4'



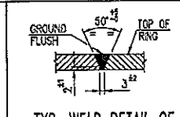

DETAIL-'D2'




DETAIL-'D3'

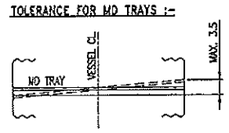



TYP. DETAIL OF SUPPORT RING
(FOR TSR #1 TO TSR #10)




TYP. WELD DETAIL OF TSR SEGMENTS

TOLERANCE FOR WD TRAYS :-




TOTAL WT. = 1797.6 Kgs.

| ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 10 | SUP. RING 4697/4520 | 0 | 0 | 16.0 | 161.1 | 1611 | SA516GR70N | 7391A05L11 | STOCK | TSR #1-#10 |
| 8 | 2 | GUSSET PLATE | 162 | 132 | 16.0 | 2.7 | 5.4 | SA516GR70N | 7391A05L11 | STOCK | |
| 7 | 2 | SUPPORT PLATE | 314 | 132 | 16.0 | 5.2 | 10.4 | SA516GR70N | 7391A05L11 | STOCK | |
| 6 | 4 | GUSSET PLATE | 226 | 148 | 16.0 | 4.2 | 16.8 | SA516GR70N | 7391A05L11 | STOCK | |
| 5 | 4 | SUPPORT PLATE | 406 | 283 | 16.0 | 14.4 | 57.6 | SA516GR70N | 7391A05L11 | STOCK | |
| 4 | 4 | GUSSET PLATE | 213 | 162 | 16.0 | 4.4 | 17.6 | SA516GR70N | 7391A05L11 | STOCK | |
| 3 | 4 | SUPPORT PLATE | 314 | 260 | 16.0 | 10.3 | 41.2 | SA516GR70N | 7391A05L11 | STOCK | |
| 2 | 4 | GUSSET PLATE | 172 | 111 | 16.0 | 2.4 | 9.6 | SA516GR70N | 7391A05L11 | STOCK | |
| 1 | 4 | SUPPORT PLATE | 276 | 202 | 16.0 | 7.0 | 28 | SA516GR70N | 7391A05L11 | STOCK | |

LIST OF MATERIAL

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( — ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) Mr. |
| Review Date : | 06 FEB. 17 |

A : Approved without Comment, B: Approved/Reviewed
R : Resubmit incorporating comments, F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of its responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. PURCHASE ORDER No. | BILFAL | REV. |
|---|---|---|---|
| | V - 2151-101-A - 033 - 00 | | |

BILFAL HEAVY INDUSTRIES Ltd.

AS BUILT

CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | 'AS BUILT' | Kirit | MUSAN | SP |
| 2 | 27.10.'05 | ISSUED FOR FINAL APPROVAL | Kirit | JAP | SP |
| 1 | 05.06.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED & ISSUED FOR CONSTRUCTION | Raju | JAP/SP | VINCENT |
| 0 | 01.05.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Raju | JAP SP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

| | |
|---|---|
| SCALE: | 1 : 40 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE... | 05.06.'05 |

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA.

شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
TRAY SUPPORT DETAILS

DRAWING NO.
DA-7478-02-007
REV. 3

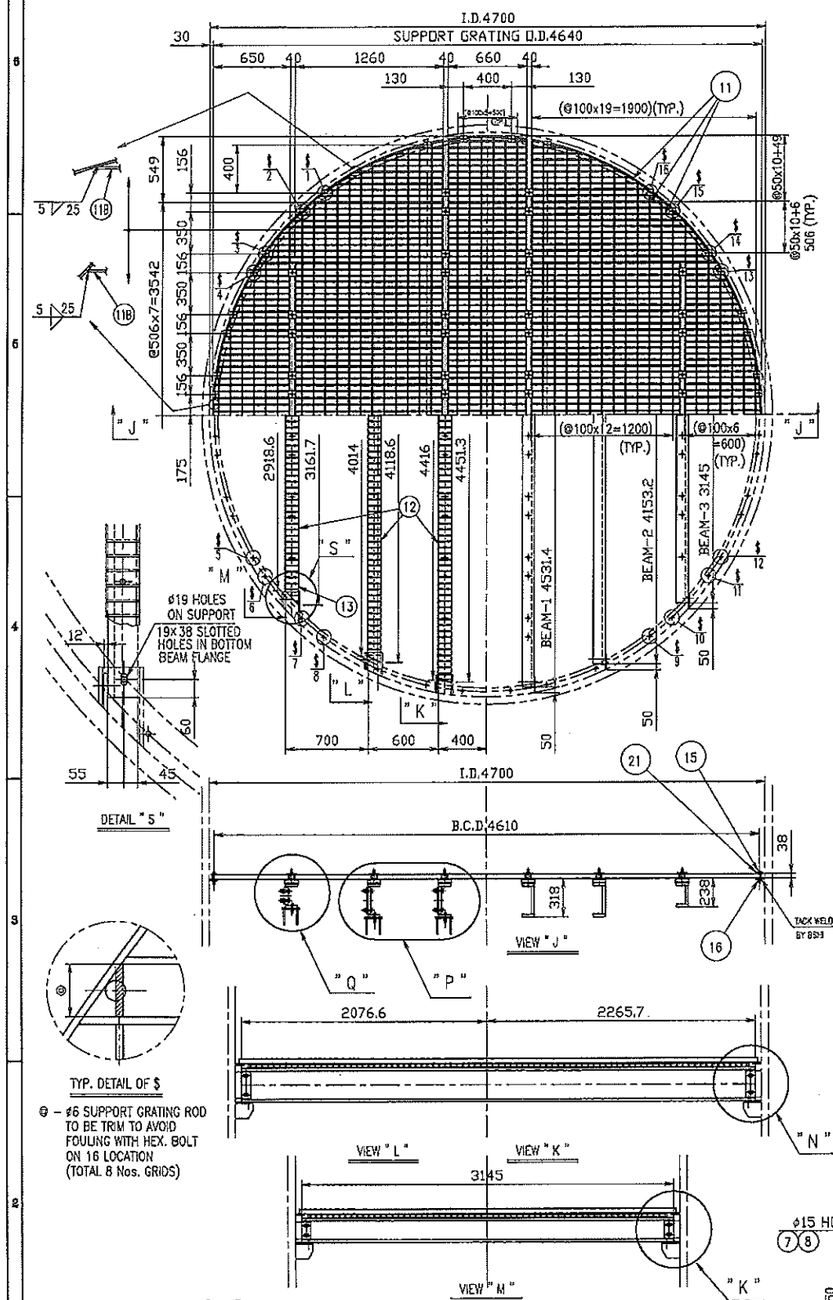

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كلياً أو جزئياً أو استخدامها لأي غرض دون الإحصول على موافقة خطية مسبقاً من شركة بلفال للصناعات الثقيلة المحدودة

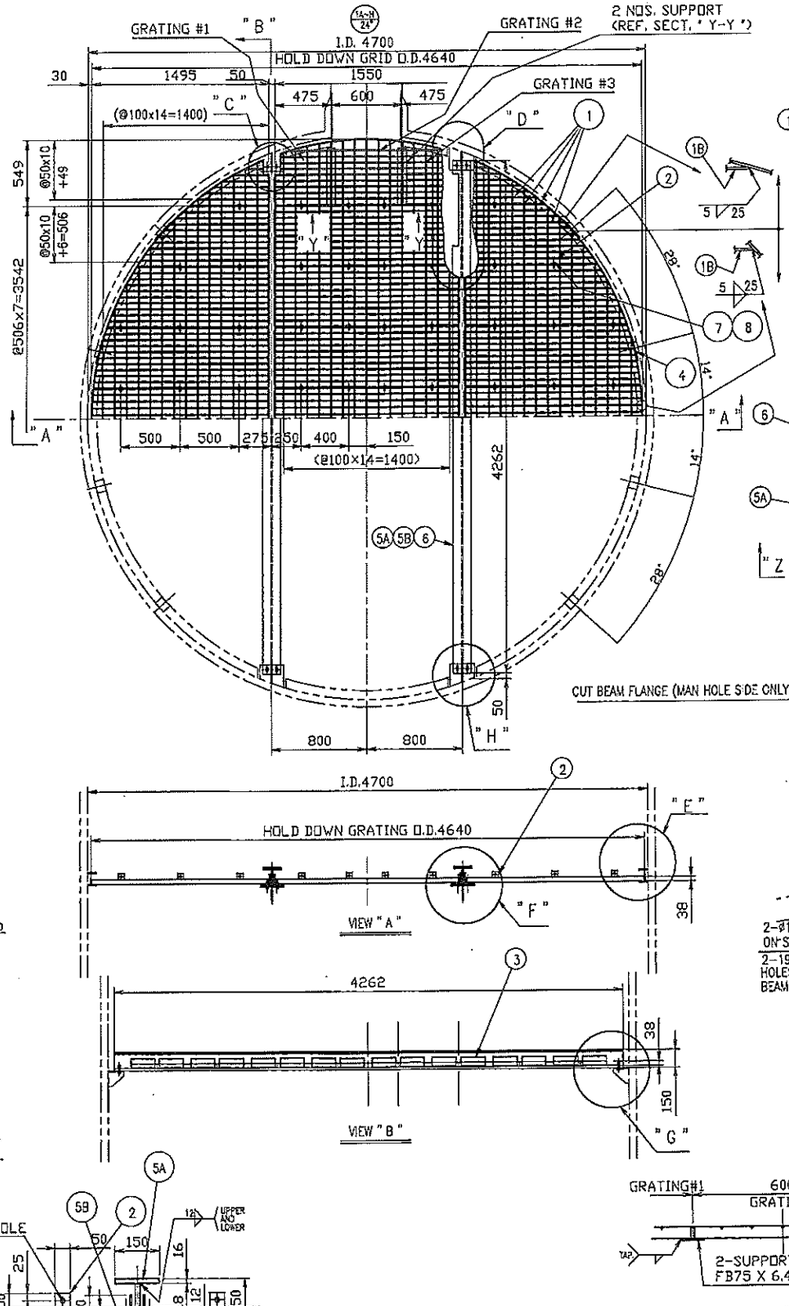
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

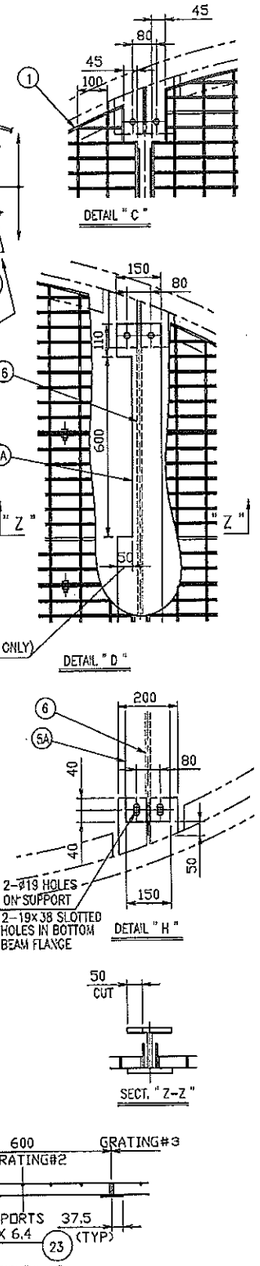
BILFAL HEAVY INDUSTRIES LTD.

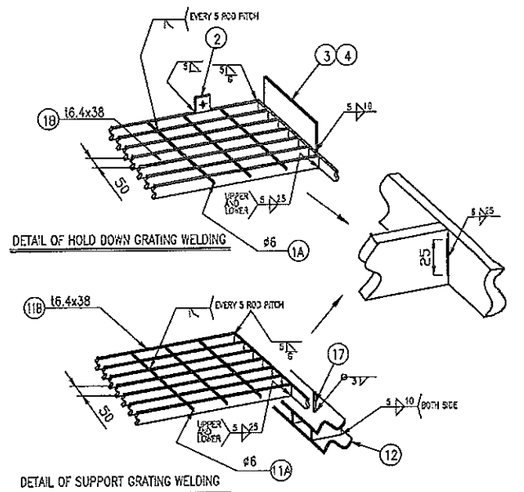
**AS BUILT**

CERTIFIED BY.....



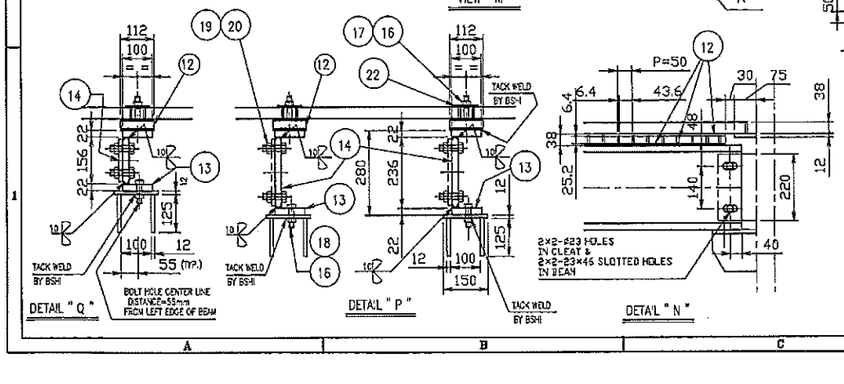

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 23 | SUPPORT | SA516 GR.70 | 2 | | | t6.4 | BY WFT |
| 22 | WASHER | SUS304 | 52 | 3 | | 60SQ. xI.D.17xt6 | BY WFT |
| 21 | WASHER | | 40 | 2 | | 50SQ. I.D 17xt6 | BY WFT |
| 20 | HEX.HEAD BOLT | | 24 | 2 | | 3/4"-10UNCx60L | BY WFT |
| 19 | HEX.NUT | | 24 | 2 | | 3/4"-10UNC | BY WFT |
| 18 | HEX.HEAD BOLT | | 12 | 1 | | 5/8"-11UNCx65L | BY WFT |
| 17 | STUD BOLT | | 52 | 3 | | 5/8"-11UNCx70L | BY WFT |
| 16 | HEX.NUT | | 104 | 6 | | 5/8"-11UNC | BY WFT |
| 15 | HEX.HEAD BOLT | SUS304 | 40 | 2 | | 5/8"-11UNCx80L | BY WFT |
| 14 | BEAM WEB | SA516 GR.70 | 1s | | | t22 | BY BELLELI |
| 13 | BEAM FLANGE | | 1s | | | t22 | BY BELLELI |
| 12 | EQUALIZER GRATING | | 1s | | | t6.4 | BY WFT |
| 11B | SUPPORT GRATING | SA516 GR.70 | 1s | | | t6.4 | BY WFT |
| 11A | SUPPORT GRATING | A36 | 1s | | | ø6 | BY WFT |
| 10 | HEX.NUT | SUS304 | 16 | 2 | | 5/8"-11UNC | BY WFT |
| 9 | HEX.HEAD BOLT | | 8 | 1 | | 5/8"-11UNCx65L | BY WFT |
| 8 | HEX.NUT | | 68 | 4 | | 1/2"-13UNC | BY WFT |
| 7 | HEX.HEAD BOLT | SUS304 | 68 | 4 | | 1/2"-13UNCx35L | BY WFT |
| 6 | SUPPORT BEAM WEB | SA516 GR.70 | 2 | | | t16 | BY BELLELI |
| 5 | SUPPORT BEAM FLANGE | | 2 | | | t16 | BY BELLELI |
| 4 | ANTI TIP BAR | | 8 | | | t6.4 | BY WFT |
| 3 | ANTI TIP BAR | | 64 | | | t6.4 | BY WFT |
| 2 | LUG PLATE | | 136 | | | t6.4 | BY WFT |
| 1B | HOLD DOWN GRATING | SA516 GR.70 | 1s | | | t6.4 | BY WFT |
| 1A | HOLD DOWN GRATING | A36 | 1s | | | ø6 | BY WFT |
| MARK No. | DESCRIPTION | MATERIAL (ASTM,JIS) | 1SET No. PIECE | SPARE | TOTAL | REMARK | SCOPE OF SUPPLY |

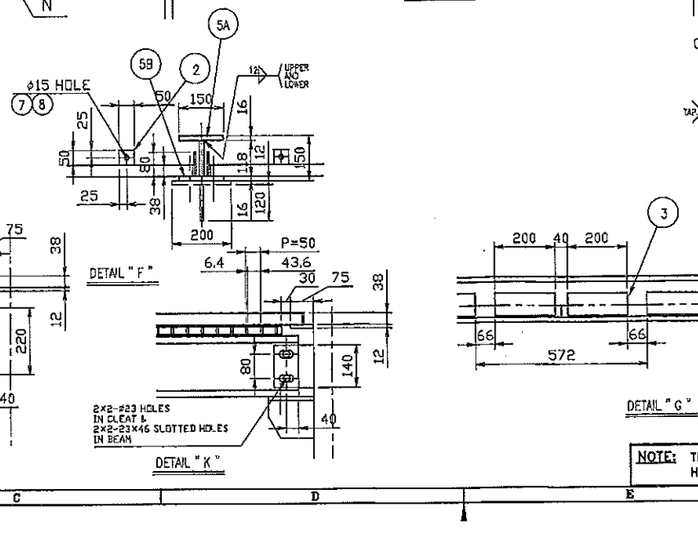










DETAIL "Q"
BOLT HOLE CENTER LINE DISTANCE=55mm FROM LEFT EDGE OF BEAM
DETAIL "P"
DETAIL "N"
2x2-ø23 HOLES IN CLEAT & 2x2-23x46 SLOTTED HOLES IN BEAM
DETAIL "K"




**NOTE:** TRIAL ASSEMBLY TO BE CARRIED OUT IN DUMMY SHELL FOR ONE SET OF HOLD DOWN AND CATALYST SUPPORT GRIDS AT BILFAL SHOP

JCP Project (JOB No. : 0-3515-20)

| | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (E&P) ZK |
| Review Date : | '06 FEB. 19 |

A : Approved without Comment; B : Approved Reviewed
R : Resubmit incorporating comments; F : Not Subject to Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of it's responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151 – 101 – A – 034 – 00 | | |

NOTE
1. QUANTITY GIVEN IN BOM IS FOR 1 SET ONLY.
TOTAL NO. OF SETS=8 NOS.
2. BEAM (D/#⑤,⑥,⑦,⑧) IS OUT OF SCOPE WFT.
3. WELDING BETWEEN P/# ⑫ & ⑬ IS OUT OF WORKS WFT.

MANUFACTURER :
WELD FAB, TECHNO, Co., LTD.
TEL (0743)-59-3378 FAX (0743)-59-3380

| WFT DWG NO | WFT JOB NO |
|---|---|
| 04-15274 BELLELI RI | W-11480 |

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 6 | 19.Dec.'05 | AS BUILT | Kiru | HUSAIN | SP |
| 5 | 30.Nov.'05 | REVISED AS MARKED ⑤ & ISSUED FOR FINAL APPROVAL | Kiru | HUSAIN | SP |
| 4 | 27.Oct.'05 | REVISED AS MARKED ④ & ISSUED FOR FINAL APPROVAL | Kiru | JAP | SP |
| 3 | 31.Aug.'05 | REVISED AS MARKED ③ | Kalyan | JAP | SP |
| 2 | 01.Aug.'05 | REVISED AS MARKED ② | Raju | JAP/BPP | VINCENT |
| 1 | 24.Apr.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED ① & ISSUED FOR CONSTRUCTION | Raju | JAP/BPP | VINCENT |
| 0 | 01.Mar.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Raju | JAP/BPP | VINCENT |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD.

SCALE: 1 : 25

CLIENT: JGC CORPORATION, JAPAN

ORDER: 0-3515-P-2151-101-A

APPROVED FOR CONSTRUCTION BY..... VINCENT DATE 24.Apr.'05

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

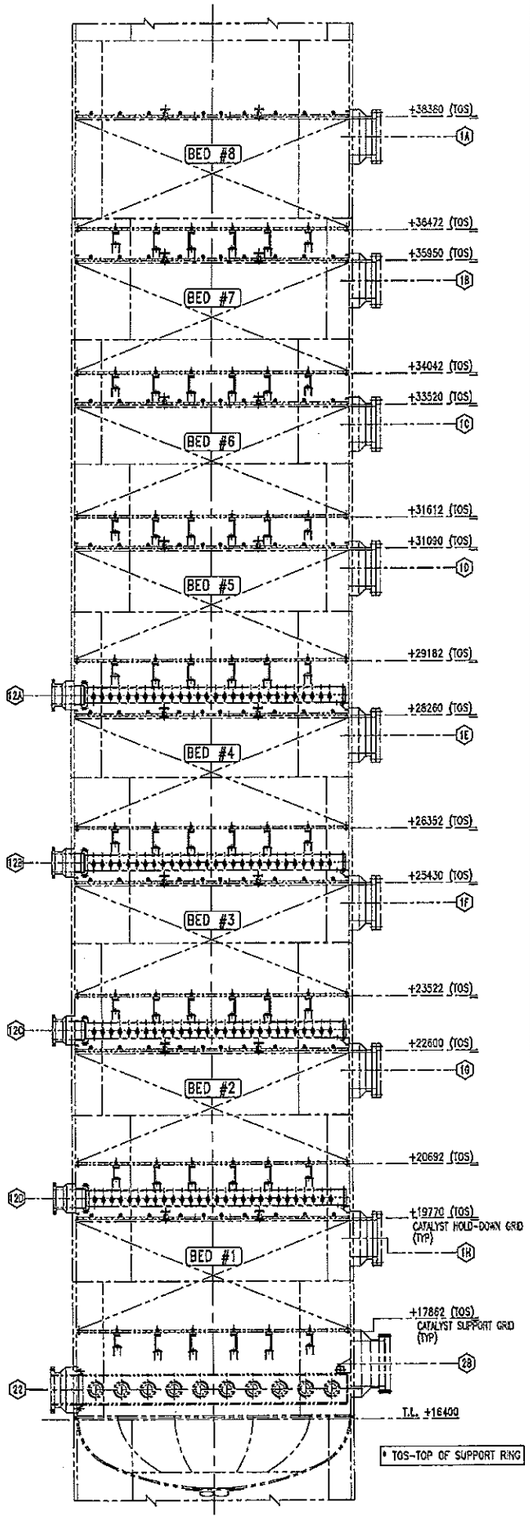
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
CATALYST SUPPORT GRIDS, HOLD-DOWN GRIDS

DRAWING NO.
DA-7478-02-008
REV. 6

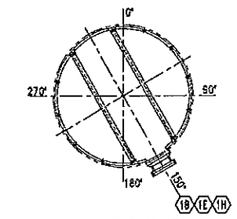

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئياً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقاً من شركة بلفال للصناعات الثقيلة المحدودة.

THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

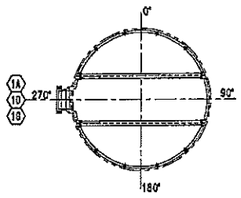

AS BUILT



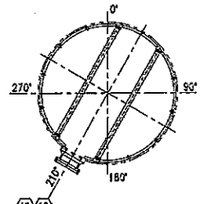

E L E V A T I O N
(FOR CATALYST SUPPORT GRIDS & HOLD-DOWN GRIDS)
(SCALE 1:50)



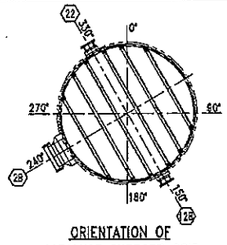
ORIENTATION OF
CATALYST HOLD DOWN GRID
(FOR BED-#1,#4,#7)



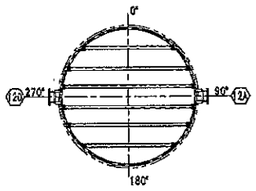
ORIENTATION OF
CATALYST HOLD DOWN GRID
(FOR BED-#2,#5,#8)



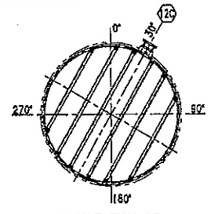
ORIENTATION OF
CATALYST HOLD DOWN GRID
(FOR BED-#3,#6)



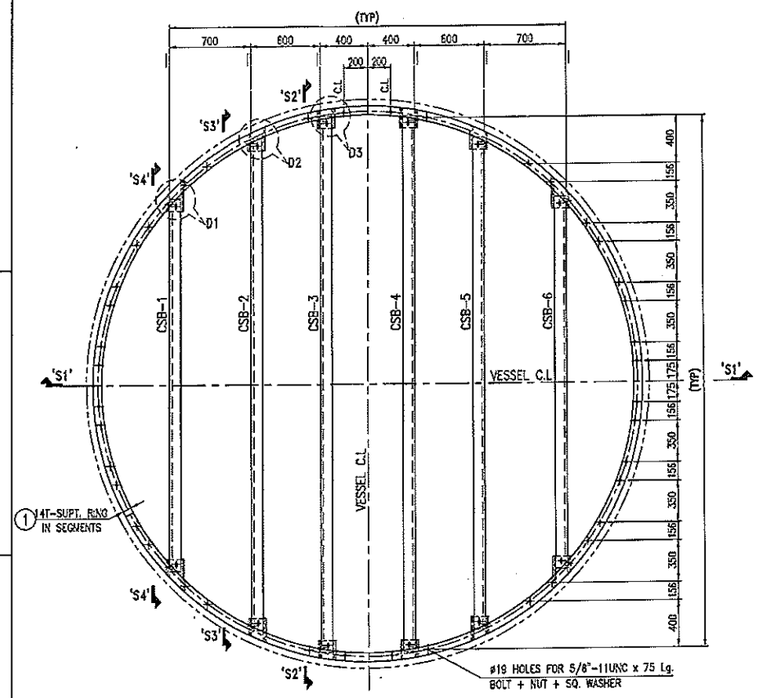
ORIENTATION OF
CATALYST SUPPORT GRID
(FOR BED-#1,#4,#7)



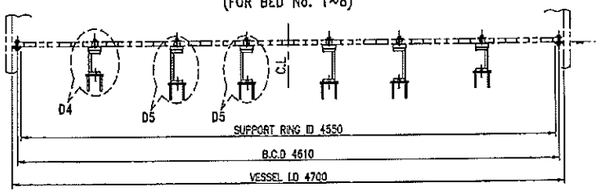
ORIENTATION OF
CATALYST SUPPORT GRID
(FOR BED-#2,#5,#8)



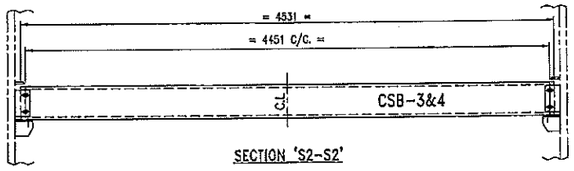
ORIENTATION OF
CATALYST SUPPORT GRID
(FOR BED-#3,#6)



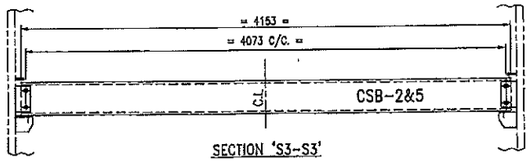

DETAIL OF CATALYST SUPPORT BEAM
(FOR BED No. 1~8)



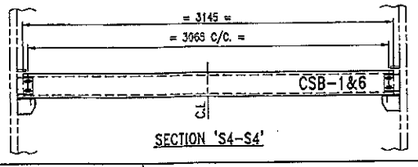

SECTION 'S1-S1'



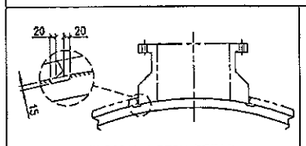

SECTION 'S2-S2'



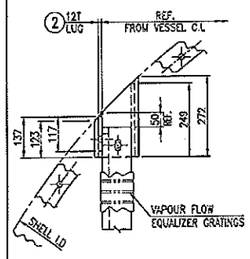

SECTION 'S3-S3'



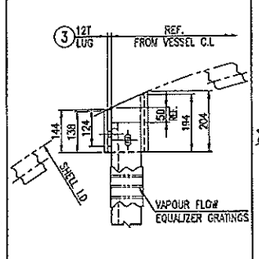

SECTION 'S4-S4'



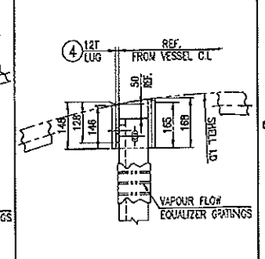

TYPICAL NOTCH DETAIL
IN SUPT. RING TO AVOID WELD
INTERFERENCE WITH NOZZLE WELD



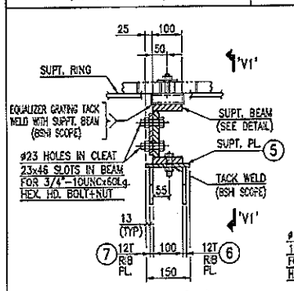

DETAIL-'D1'
(TYP. FOR CSB-1&6)



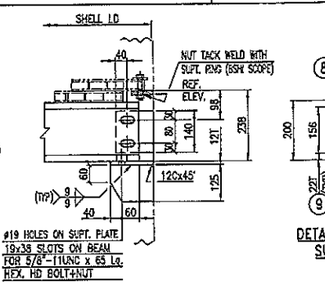

DETAIL-'D2'
(TYP. FOR CSB-2&5)



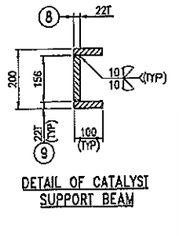

DETAIL-'D3'
(TYP. FOR CSB-3&4)



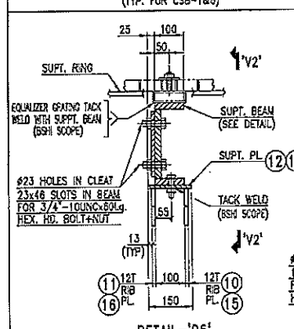

DETAIL-'D4'
(TYP. FOR CSB-1&6)



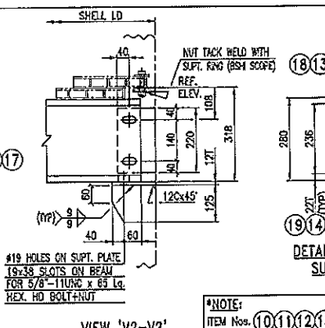

VIEW 'V1-V1'



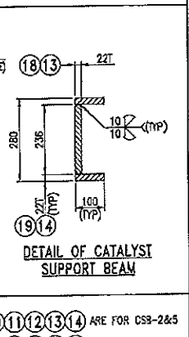

DETAIL OF CATALYST
SUPPORT BEAM




DETAIL-'D5'
(TYP. FOR CSB-2~5)

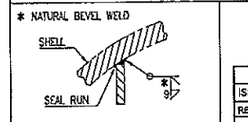



VIEW 'V2-V2'

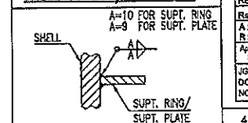



DETAIL OF CATALYST
SUPPORT BEAM

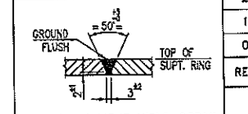
*NOTE:
ITEM Nos. 10 11 12 13 14 ARE FOR CSB-2&5
ITEM Nos. 15 16 17 18 19 ARE FOR CSB-3&4




TYPICAL WELD DETAIL OF
SHELL TO LUG/ RIB PLATE




TYPICAL WELD DETAIL OF SUPT.
RING/SUPT. PLATE TO SHELL




TYPICAL SEGMENT WELD DETAIL
OF SUPT. RING

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH
DWG. No. DA-7478-02-009 SHEET 2 OF 2 (V-2151-101-A-081)

| JCP Project (JOB No. : 0-3515-20) | | |
|---|---|---|
| ISSUE PURPOSE : | AB | |
| RESULT CODE : A, B, R, F | (A) | |
| NEXT STATUS : FA, FI, FR, FC | (—) | |
| RESUBMISSION DATE : | (—) | |
| RESPONSIBLE DEPT-PERSON : | (EQP) 기홍 | |
| Review Date : | (06.FEB.17 | |

A : Approved without Comment; B : Approved/Reviewed
R : Resubmit incorporating comments; F : Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | - 2151-101-A - 035 - | 00 | |

AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 4 | 19.12.'05 | 'AS BUILT' | KIRIT | HUSAIN | SP |
| 3 | 27.10.'05 | REVISED AS MARKED (3) ISSUED FOR FINAL APPROVAL | KIRIT | JAP | SP |
| 2 | 09.05.'05 | REVISED AS PER CLIENT'S COMMENTS MARKED (2) | KIRIT | JAP/BPP | VINCENT |
| 1 | 25.04.'05 | REVISED AS MARKED (1) & ISSUED FOR CONSTRUCTION | KIRIT | JAP/BPP | VINCENT |
| 0 | 14.03.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | KIRIT | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI بيليلي السعودية
HEAVY INDUSTRIES LTD.

SCALE: 1 : 25
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY..... VINCENT
DATE..... 25.04.'05

BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة
الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
SUPPORT DET. FOR CATALYST SUPP. GRIDS & HOLD-DOWN GRIDS

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.
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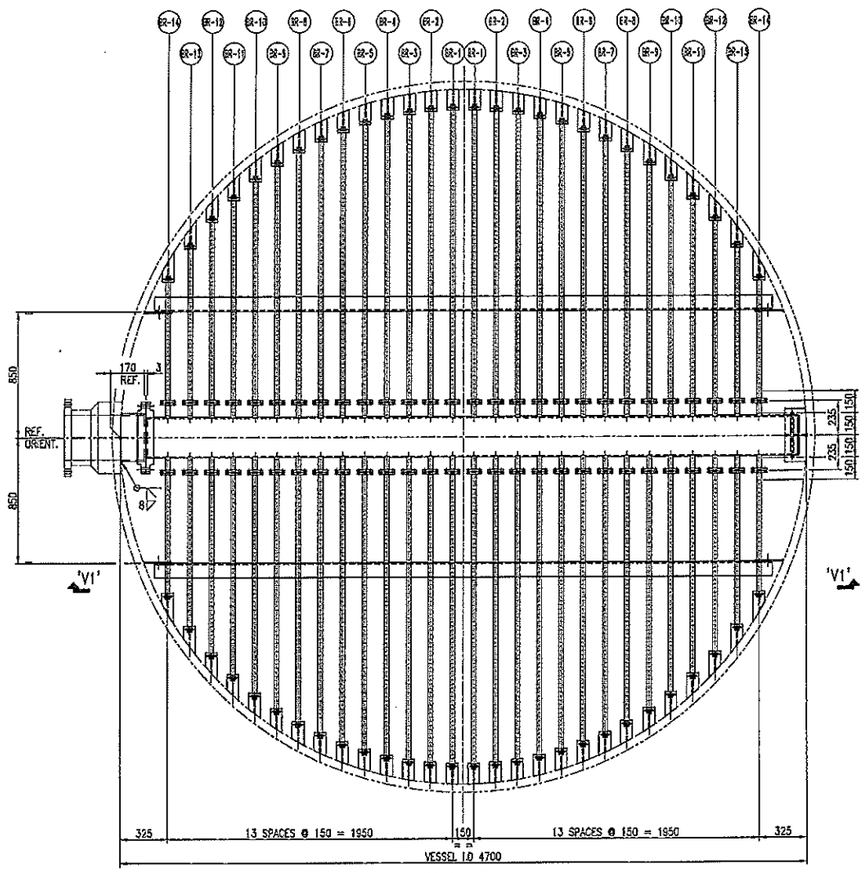
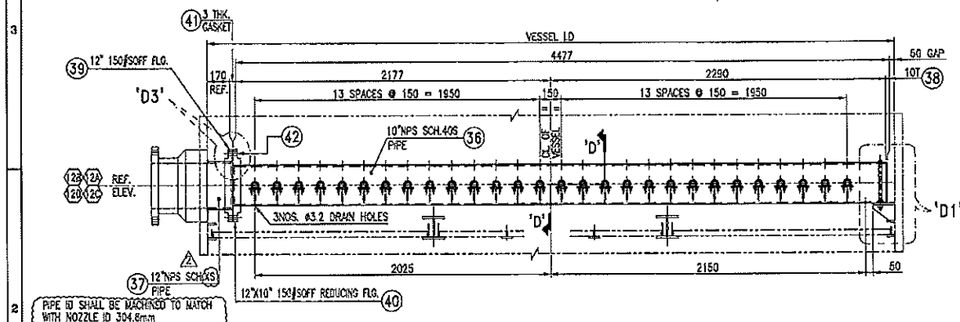
DRAWING NO. DA-7478-02-009
SHEET 1 OF 2
REV. 4

AS BUILT
17.FEB.'06

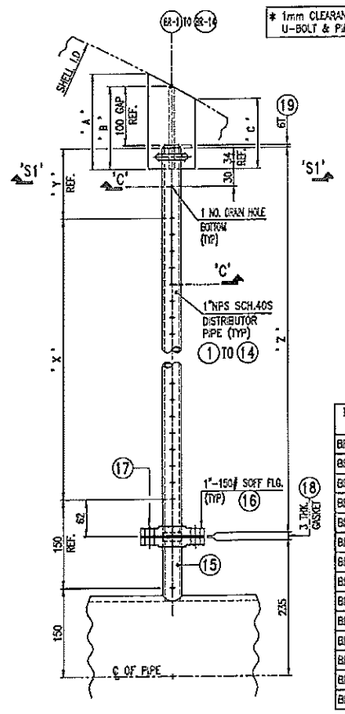



PLAN VIEW



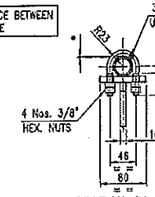

DETAIL OF DISTRIBUTOR FOR NOZZLES 12A, 12B, 12C & 12D'.

SUPPORT ANGLE NOT SHOWN FOR CLARITY

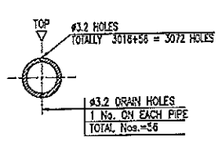



TYP. DETAIL FOR DISTRIBUTOR PIPES

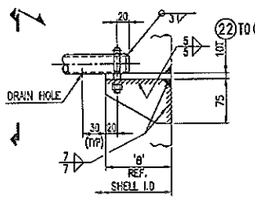
FOR BR-1 TO BR-14

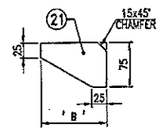



SECTION S1-S1



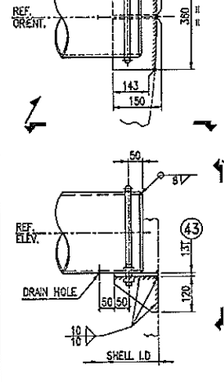

SECTION C-C



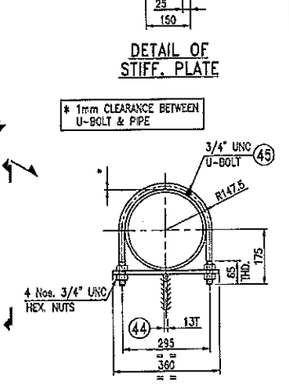




DETAIL OF STIFF. PLATE

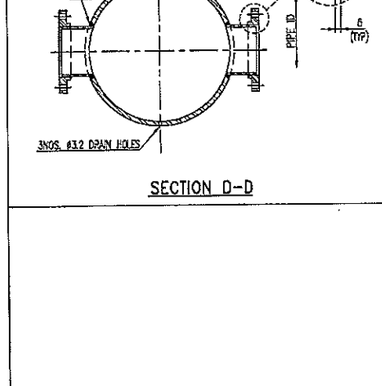
| MARK NO. | DIMENSIONS X | Y | Z | A | B | C | QTY | POS. NOS. |
|---|---|---|---|---|---|---|---|---|
| BR-1 | 67 SPACES @ 28 = 1876 | 67 | 2005 | 141 | 140 | 138 | 4 | (1)(15)(16)(17)(18)(19)(20)(21)(22) |
| BR-2 | 66 SPACES @ 28 = 1848 | 85 | 1995 | 144 | 140 | 136 | 4 | (2)(15)(16)(17)(18)(19)(20)(21)(23) |
| BR-3 | 65 SPACES @ 28 = 1848 | 66 | 1976 | 148 | 140 | 133 | 4 | (3)(15)(16)(17)(18)(19)(20)(21)(24) |
| BR-4 | 64 SPACES @ 28 = 1792 | 93 | 1947 | 149 | 140 | 130 | 4 | (4)(15)(16)(17)(18)(19)(20)(21)(25) |
| BR-5 | 63 SPACES @ 28 = 1764 | 81 | 1907 | 152 | 140 | 128 | 4 | (5)(15)(16)(17)(18)(19)(20)(21)(26) |
| BR-6 | 61 SPACES @ 28 = 1708 | 88 | 1856 | 155 | 140 | 125 | 4 | (6)(15)(16)(17)(18)(19)(20)(21)(27) |
| BR-7 | 57 SPACES @ 28 = 1596 | 136 | 1794 | 158 | 140 | 121 | 4 | (7)(15)(16)(17)(18)(19)(20)(21)(28) |
| BR-8 | 55 SPACES @ 28 = 1540 | 117 | 1719 | 161 | 140 | 118 | 4 | (8)(15)(16)(17)(18)(19)(20)(21)(29) |
| BR-9 | 53 SPACES @ 28 = 1484 | 84 | 1630 | 165 | 140 | 114 | 4 | (9)(15)(16)(17)(18)(19)(20)(21)(30) |
| BR-10 | 48 SPACES @ 28 = 1344 | 119 | 1525 | 170 | 140 | 109 | 4 | (10)(15)(16)(17)(18)(19)(20)(21)(31) |
| BR-11 | 45 SPACES @ 28 = 1260 | 78 | 1400 | 175 | 140 | 103 | 4 | (11)(15)(16)(17)(18)(19)(20)(21)(32) |
| BR-12 | 39 SPACES @ 28 = 1092 | 93 | 1252 | 182 | 140 | 96 | 4 | (12)(15)(16)(17)(18)(19)(20)(21)(33) |
| BR-13 | 32 SPACES @ 28 = 895 | 115 | 1073 | 191 | 140 | 86 | 4 | (13)(15)(16)(17)(18)(19)(20)(21)(34) |
| BR-14 | 24 SPACES @ 28 = 672 | 114 | 848 | 205 | 140 | 69 | 4 | (14)(15)(16)(17)(18)(19)(20)(21)(35) |




DETAIL-'D1'




DETAIL OF STIFF. PLATE




SECTION D-D




VIEW V1-V1

TYP. DETAIL OF FABRICATED ANGLE




DETAIL-'D2'




DETAIL-'D3'

QTY. INDICATED IN L.O.M FOR ONE DISTRIBUTOR ONLY.
TOTAL QTY. REQD. FOR FOUR Nos. DISTRIBUTORS.

● NON-ASBESTOS (GASKET MATERIAL TO BE SUITABLE FOR BENZENE-STYRENE SERVICE).

TOTAL WT. = 1022.3 Kgs.

| REF. | ITEM. | POS. QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⚠ | 48 | 9 | S/S UNC BOLT+NT | 50 | 0 | 0.0 | 0.5 | 4.5 | SS304 | 7478A17B03 | 7478G0-017 | 8+1 SPARE |
| | 47 | 4 | PLATE | 188 | 150 | 10.0 | 2.4 | 9.6 | SA516GR70N | 7478A03L03 | 7478G0-003 | |
| | 46 | 2 | FAB. ANGLE (SEE DET) | 4233 | 0 | 10.0 | 82.7 | 165.4 | SA516GR70N | 7478A03L03 | 7478G0-003 | |
| ⚠ | 45 | 2 | U-BOLT 3/4" UNC+4 HEXNT | 814 | 0 | 0.0 | 1.5 | 3.0 | SS304 | 7478A17B12 | 7478G0-017 | 1+1 SPARE |
| | 44 | 1 | STIFF. PLATE | 150 | 120 | 13.0 | 1.9 | 1.9 | SA516GR70N | 7478A03L05 | 7478G0-003 | |
| | 43 | 1 | SUPPORT PLATE | 360 | 150 | 13.0 | 5.5 | 5.5 | SA516GR70N | 7478A03L05 | 7478G0-003 | |
| ⚠ | 42 | 13 | ST+2NT 7/8"UNC | 125 | 0 | 0.0 | 0.9 | 11.7 | SS304 | 7478A17B07 | 7478G0-017 | 2+1 SPARE |
| ⚠ | 41 | 2 | GK-483/324/3.0T | 0 | 0 | 0.0 | 0.0 | 0.0 | ● | 7478A16G12 | 7478G0-016 | 1+1 SPARE |
| | 40 | 1 | REDUCING F 12"x10" 150#SOFF | 0 | 0 | 0.0 | 32.0 | 32.0 | SA182GR.F304 | 7478A10F02 | 7478G0-010 | |
| | 39 | 1 | F 12" 150# SOFF | 0 | 0 | 0.0 | 28.0 | 29.0 | SA105 N | 7478A06F12 | 7478G0-006 | |
| | 38 | 1 | END PLATE OD 257 | 0 | 0 | 10.0 | 4.2 | 4.2 | SA240GR.304 | STOCK | | |
| ⚠ | 37 | 1 | PI 12" SCH.(XS) | 158 | 0 | 0.0 | (15.4) | 15.4 | SA106GR.B | 7478A07T07 | 7478G0-007 | |
| | 36 | 1 | PI 10" SCH 40S | 4456 | 0 | 0.0 | 268.8 | 268.8 | SA312TP304 | 7478A09T02 | 7478G0-009 | |
| | 35 | 4 | SUPPORT PLATE | 225 | 80 | 10.0 | 1.4 | 5.6 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-14 |
| | 34 | 4 | SUPPORT PLATE | 191 | 80 | 10.0 | 1.3 | 5.2 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-13 |
| | 33 | 4 | SUPPORT PLATE | 182 | 80 | 10.0 | 1.2 | 4.8 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-12 |
| | 32 | 4 | SUPPORT PLATE | 175 | 80 | 10.0 | 1.2 | 4.8 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-11 |
| | 31 | 4 | SUPPORT PLATE | 170 | 80 | 10.0 | 1.1 | 4.4 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-10 |
| | 30 | 4 | SUPPORT PLATE | 165 | 80 | 10.0 | 1.1 | 4.4 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-9 |
| | 29 | 4 | SUPPORT PLATE | 161 | 80 | 10.0 | 1.1 | 4.4 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-8 |
| | 28 | 4 | SUPPORT PLATE | 158 | 80 | 10.0 | 1.1 | 4.4 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-7 |
| | 27 | 4 | SUPPORT PLATE | 155 | 80 | 10.0 | 1.0 | 4.0 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-6 |
| | 26 | 4 | SUPPORT PLATE | 152 | 80 | 10.0 | 1.0 | 4.0 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-5 |
| | 25 | 4 | SUPPORT PLATE | 149 | 80 | 10.0 | 1.0 | 4.0 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-4 |
| | 24 | 4 | SUPPORT PLATE | 146 | 80 | 10.0 | 1.0 | 4.0 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-3 |
| | 23 | 4 | SUPPORT PLATE | 144 | 80 | 10.0 | 1.0 | 4.0 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-2 |
| | 22 | 4 | SUPPORT PLATE | 141 | 80 | 10.0 | 1.0 | 4.0 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-1 |
| | 21 | 56 | STIFF. PLATE | 140 | 75 | 10.0 | 1.0 | 56.0 | SA516GR70N | 7478A03L03 | 7478G0-003 | BR-1-BR-14 |
| ⚠ | 20 | 59 | U-BOLT 3/8" UNC+4 HEXNT | 163 | 0 | 0.0 | 0.13 | 7.7 | SS304 | 7478A17B11 | 7478G0-017 | 56+3 SPARE |
| | 19 | 56 | END PLATE OD 27 | 0 | 0 | 8.0 | 0.1 | 5.6 | SA240GR.304 | STOCK | | BR-1-BR-14 |
| ⚠ | 18 | 112 | GK-108/34/3.0T | 0 | 0 | 0.0 | 0.0 | 0.0 | ● | 7478A16G12 | 7478G0-016 | 56+56 SPARE |
| ⚠ | 17 | 235 | 1/2"UNC BOLT+NT | 50 | 0 | 0.0 | 0.1 | 23.6 | SS304 | 7478A17B01 | 7478G0-017 | 224+12 SPARE |
| | 16 | 112 | F 1" 150# SOFF | 0 | 0 | 0.0 | 1.0 | 112.0 | SA182GR.F304 | 7478A10F01 | 7478G0-010 | BR-1-BR-14 |
| | 15 | 56 | PI 1" SCH 40S | 104 | 0 | 0.0 | 0.3 | 16.8 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-1-BR-14 |
| | 14 | 4 | PI 1" SCH 40S | 843 | 0 | 0.0 | 2.2 | 8.8 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-14 |
| | 13 | 4 | PI 1" SCH 40S | 1068 | 0 | 0.0 | 2.7 | 10.8 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-13 |
| | 12 | 4 | PI 1" SCH 40S | 1247 | 0 | 0.0 | 3.2 | 12.8 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-12 |
| | 11 | 4 | PI 1" SCH 40S | 1395 | 0 | 0.0 | 3.5 | 14.0 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-11 |
| | 10 | 4 | PI 1" SCH 40S | 1520 | 0 | 0.0 | 3.8 | 15.2 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-10 |
| | 9 | 4 | PI 1" SCH 40S | 1625 | 0 | 0.0 | 4.1 | 16.4 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-9 |
| | 8 | 4 | PI 1" SCH 40S | 1714 | 0 | 0.0 | 4.3 | 17.2 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-8 |
| | 7 | 4 | PI 1" SCH 40S | 1789 | 0 | 0.0 | 4.5 | 18.0 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-7 |
| | 6 | 4 | PI 1" SCH 40S | 1851 | 0 | 0.0 | 4.6 | 18.4 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-6 |
| | 5 | 4 | PI 1" SCH 40S | 1902 | 0 | 0.0 | 4.7 | 18.8 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-5 |
| | 4 | 4 | PI 1" SCH 40S | 1942 | 0 | 0.0 | 4.8 | 19.2 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-4 |
| | 3 | 4 | PI 1" SCH 40S | 1971 | 0 | 0.0 | 4.9 | 19.6 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-3 |
| | 2 | 4 | PI 1" SCH 40S | 1993 | 0 | 0.0 | 5.01 | 20.0 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-2 |
| | 1 | 4 | PI 1" SCH 40S | 2006 | 0 | 0.0 | 5.1 | 20.4 | SA312TP304 | 7478A09T01 | 7478G0-009 | BR-1 |

LIST OF MATERIAL

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | A9 |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( — ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | ERD/ 06 FEB.'17 |
| Review Data : | |
| A : Approved without Comment; B : Approved Revised; R : Resubmit incorporating comments; F : Not Subject to | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of its responsibilities and liability under the contract. | |
| JGC DOC. NO. | ORIG. PURCHASE ORDER No. SERIAL REV. V — 2151-101-A — 036 — 00 |

BILFAL HEAVY INDUSTRIES Ltd.

AS BUILT

CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 2 | 19.12.'06 | REVISED AS MARKED ⚠ & "AS BUILT" | KIRIT | SUSAN | SP |
| 1 | 06.04.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠ ISSUED FOR CONSTRUCTION | RAJU | JAP/BPP | VINCENT |
| 0 | 19.01.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | RAJU | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

| | |
|---|---|
| SCALE: | 1 : 20 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE..... | 06.04.'05 |

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY

JCP PROJECT, AL JUBAIL, SAUDI ARABIA

ALKYLATOR (R-3201)

DISTRIBUTOR FOR NOZZLES 12A, 12B, 12C & 12D

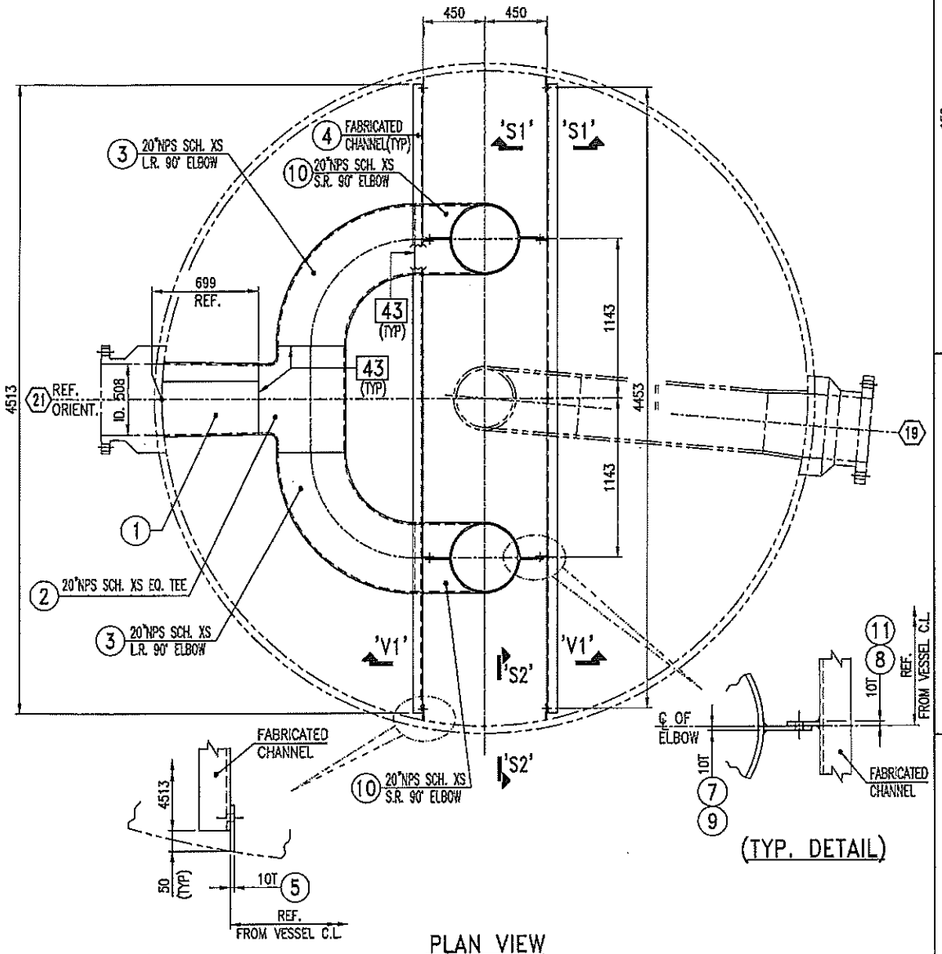
DRAWING NO.

DA-7478-02-010

REV. 2

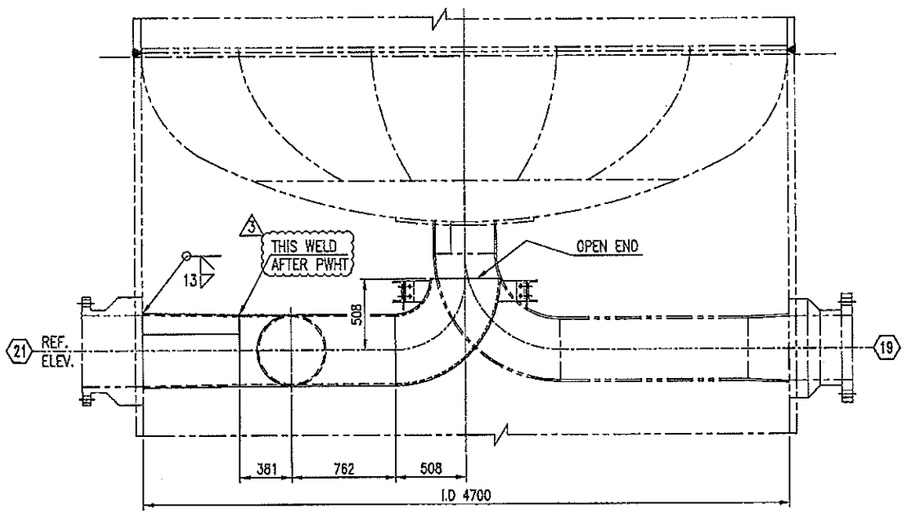
لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو إستخدامها لأي غرض (إلاالحصول على موافقة خطية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.

THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

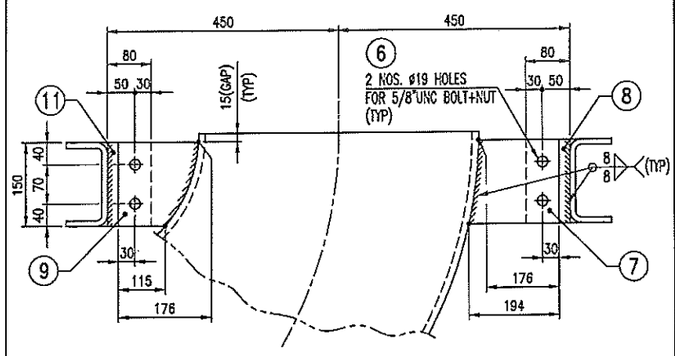



(TYP. DETAIL)

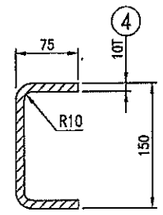
PLAN VIEW



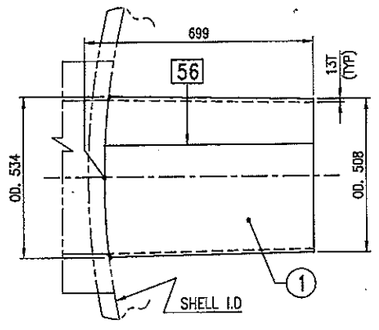

DETAIL OF MID REFLUX FOR NOZZLE-21



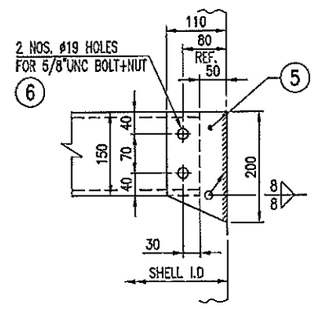

VIEW V1-V1




SECTION S1-S1




DETAIL OF CONE




SECTION S2-S2

TOTAL WT. = 1209.2 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11 | 2 | SUPPORT PLATE | 150 | 80 | 10.0 | 1.0 | 2.0 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 10 | 2 | EL 20" SR 90° SCH.XS | 0 | 0 | 0.0 | 126.2 | 252.4 | SA234GR.WPB | 7478A08C09 | 747800-008 | |
| | 9 | 2 | SUPPORT PLATE | 176 | 150 | 10.0 | 2.0 | 4.0 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 8 | 2 | SUPPORT PLATE | 150 | 80 | 10.0 | 1.0 | 2.0 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 7 | 2 | SUPPORT PLATE | 194 | 150 | 10.0 | 2.3 | 4.6 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 6 | 17 | 5/8"UNC BOLT+NT | 50 | 0 | 0.0 | 0.5 | 8.0 | SS304 | 7478A17B03 | 747800-017 | 16+1 SPARE |
| | 5 | 4 | SUPPORT PLATE | 200 | 110 | 10.0 | 1.8 | 7.2 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 4 | 2 | FAB. CHANNEL (SEE DETAIL) | 4513 | 0 | 10.0 | 94.9 | 189.8 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 3 | 2 | EL 20" LR 90° SCH.XS | 0 | 0 | 0.0 | 190.1 | 380.2 | SA234GR.WPB | 7478A08C05 | 747800-008 | |
| | 2 | 1 | EQ.TEE-20" SCH.XS | 0 | 0 | 0.0 | 245.0 | 245.0 | SA234GR.WPB | 7478A08C06 | 747800-008 | |
| | 1 | 1 | CONE (SEE DETAIL) | 0 | 0 | 13.0 | 114.0 | 114.0 | SA516GR70N | 7478A03L05 | 747800-003 | |

LIST OF MATERIAL

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) Y.K. |
| Review Date : | '06.FEB.17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to
Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A | – 037 | – 00 |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | REVISED AS MARKED 3 & 'AS BUILT' | KIRIT | HUSAIN | SP |
| 2 | 16.05.'05 | REVISED AS MARKED 2 | RAJU | JAP/SP | VINCENT |
| 1 | 06.04.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED 1 & ISSUED FOR CONSTRUCTION | RAJU | JAP/BPP | VINCENT |
| 0 | 19.01.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | RAJU | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليلي السعودية للصناعات الثقيلة المحدودة

| | |
|---|---|
| SCALE: | 1:30 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE..... | 06.04.'05 |

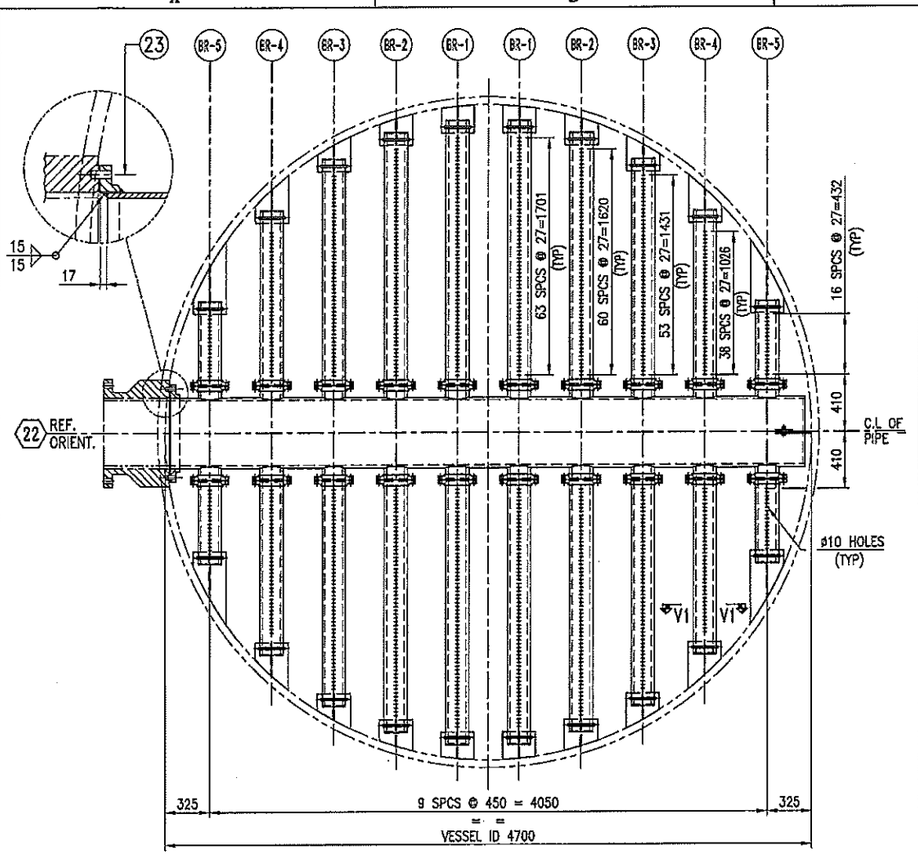
BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
VAPOUR DRAW OFF FOR NOZZLE 21

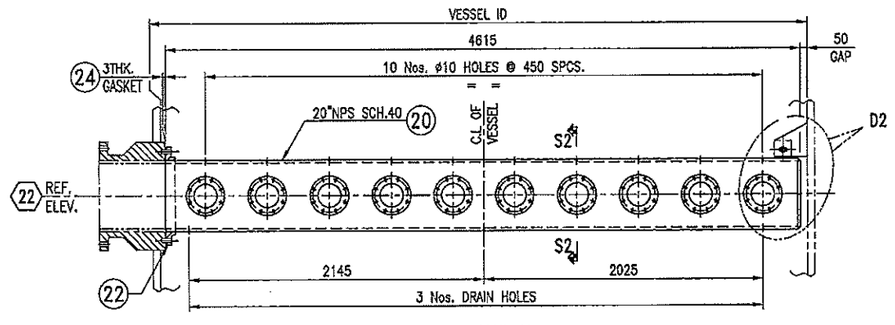
لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقامن شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EVPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

DRAWING NO. DA-7478-02-011 REV. 3

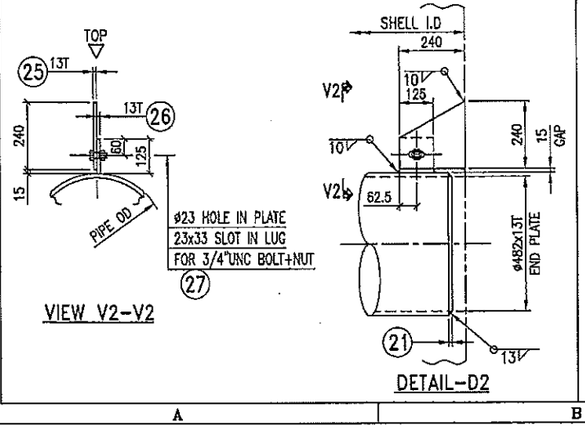
AS BUILT
FILE NAME : DA7478020111




PLAN



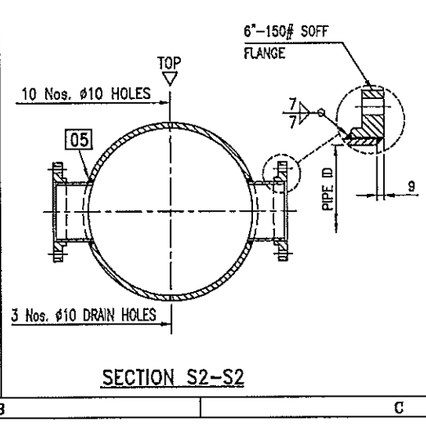

ELEVATION



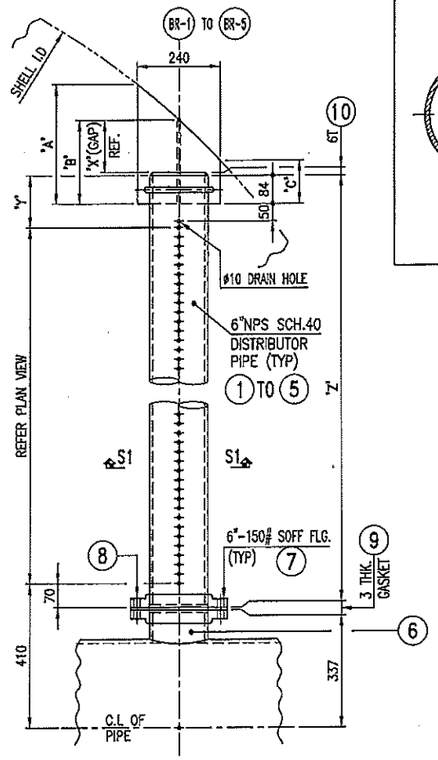

VIEW V2-V2




DETAIL-D2

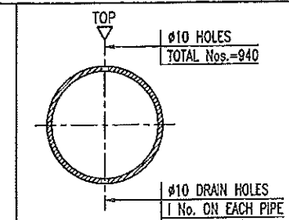



SECTION S2-S2

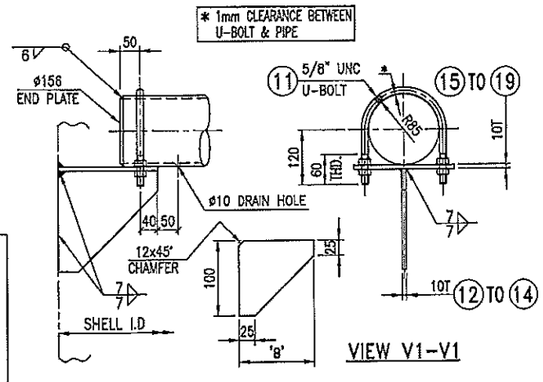



TYP. DETAIL FOR DISTRIBUTOR PIPES
FOR BR-1 TO BR-5

| MARK NO. | DIMENSIONS | | | | | | | POS. NOS. |
|---|---|---|---|---|---|---|---|---|
| | X | Y | Z | A | B | C | QTY | |
| BR-1 | 100 | 122 | 1893 | 198 | 190 | 175 | 4 | 1 6 7 8 9 10 11 12 15 |
| BR-2 | 100 | 115 | 1805 | 223 | 190 | 150 | 4 | 2 6 7 8 9 10 11 12 16 |
| BR-3 | 100 | 116 | 1617 | 251 | 190 | 120 | 4 | 3 6 7 8 9 10 11 12 17 |
| BR-4 | 150 | 152 | 1248 | 341 | 240 | 124 | 4 | 4 6 7 8 9 10 11 13 18 |
| BR-5 | 250 | 94 | 596 | 524 | 340 | 108 | 4 | 5 6 7 8 9 10 11 4 19 |




SECTION S1-S1




VIEW V1-V1

SUPPORT DETAIL FOR 6" PIPE
(TYP)

● NON-ASBESTOS (GASKET MATERIAL TO BE SUITABLE FOR BENZENE-STYRENE SERVICE).

TOTAL WT. = 2418.7 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 27 | 2 | 3/4"UNC BOLT+NT | 55 | 0 | 0.0 | 0.5 | 1.0 | SS304 | 7478A17B05 | 747800-017 | 1+1 SPARE |
| | 26 | 1 | SUPPORT PLATE | 125 | 125 | 13.0 | 1.6 | 1.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 25 | 1 | SUPPORT PLATE | 240 | 240 | 13.0 | 5.9 | 5.9 | SA516GR70N | 7478A03L05 | 747800-003 | |
| 2 | 24 | 2 | GK-699/511/3.0T | 0 | 0 | 0.0 | 0.0 | 0.0 | ● | 7478A16G12 | 747800-016 | 1+1 SPARE |
| 2 | 23 | 21 | 1 1/8"UNC BOLT | 85 | 0 | 0.0 | 0.5 | 10.5 | SS304 | 7478A37B01 | 747800-037 | 20+1 SPARE |
| | 22 | 1 | F 20" 150# SOFF | 0 | 0 | 0.0 | 70.0 | 70.0 | SA105 N | 7478A06F13 | 747800-006 | |
| | 21 | 1 | END PLATE OD 482 | 0 | 0 | 13.0 | 18.6 | 18.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 20 | 1 | PI 20" SCH 40 | 4585 | 0 | 0.0 | 840.1 | 840.1 | SA106GR.B | 7478A07T08 | 747800-007 | |
| | 19 | 4 | SUPPORT PLATE | 524 | 240 | 10.0 | 9.9 | 39.6 | SA516GR70N | 7478A03L03 | 747800-003 | BR-5 |
| | 18 | 4 | SUPPORT PLATE | 341 | 240 | 10.0 | 6.5 | 26.0 | SA516GR70N | 7478A03L03 | 747800-003 | BR-4 |
| | 17 | 4 | SUPPORT PLATE | 251 | 240 | 10.0 | 4.8 | 19.2 | SA516GR70N | 7478A03L03 | 747800-003 | BR-3 |
| | 16 | 4 | SUPPORT PLATE | 240 | 223 | 10.0 | 4.3 | 17.2 | SA516GR70N | 7478A03L03 | 747800-003 | BR-2 |
| | 15 | 4 | SUPPORT PLATE | 240 | 198 | 10.0 | 3.8 | 15.2 | SA516GR70N | 7478A03L03 | 747800-003 | BR-1 |
| | 14 | 4 | STIFF. PLATE | 340 | 100 | 10.0 | 2.7 | 10.8 | SA516GR70N | 7478A03L03 | 747800-003 | BR-5 |
| | 13 | 4 | STIFF. PLATE | 240 | 100 | 10.0 | 1.9 | 7.6 | SA516GR70N | 7478A03L03 | 747800-003 | BR-4 |
| | 12 | 12 | STIFF. PLATE | 190 | 100 | 10.0 | 1.5 | 18.0 | SA516GR70N | 7478A03L03 | 747800-003 | BR-1~BR-3 |
| 2 | 11 | 21 | U-BOLT 5/8" UNC+4 HEXNT | 532 | 0 | 0.0 | 1.0 | 21.0 | SS304 | 7478A17B13 | 747800-017 | 20+1 SPARE |
| | 10 | 20 | END PLATE OD 156 | 0 | 0 | 6.0 | 1.0 | 20.0 | SA516GR70N | 7478A03L01 | 747800-003 | BR-1~BR-5 |
| 2 | 9 | 40 | GK-280/170/3.0T | 0 | 0 | 0.0 | 0.0 | 0.0 | ● | 7478A16G12 | 747800-016 | 20+20 SPARE |
| 2 | 8 | 168 | ST+2NT 3/4"UNC | 105 | 0 | 0.0 | 0.4 | 67.2 | SS304 | 7478A17B06 | 747800-017 | 160+8 SPARE |
| | 7 | 40 | F 6" 150# SOFF | 0 | 0 | 0.0 | 8.6 | 344.0 | SA105 N | 7478A06F11 | 747800-006 | BR-1~BR-5 |
| | 6 | 20 | PI 6" SCH 40 | 105 | 0 | 0.0 | 3.0 | 60.0 | SA106GR.B | 7478A07T05 | 747800-007 | BR-1~BR-5 |
| | 5 | 4 | PI 6" SCH 40 | 587 | 0 | 0.0 | 16.6 | 66.4 | SA106GR.B | 7478A07T05 | 747800-007 | BR-5 |
| | 4 | 4 | PI 6" SCH 40 | 1239 | 0 | 0.0 | 35.1 | 140.4 | SA106GR.B | 7478A07T05 | 747800-007 | BR-4 |
| | 3 | 4 | PI 6" SCH 40 | 1608 | 0 | 0.0 | 45.5 | 182.0 | SA106GR.B | 7478A07T05 | 747800-007 | BR-3 |
| | 2 | 4 | PI 6" SCH 40 | 1796 | 0 | 0.0 | 50.8 | 203.2 | SA106GR.B | 7478A07T05 | 747800-007 | BR-2 |
| | 1 | 4 | PI 6" SCH 40 | 1884 | 0 | 0.0 | 53.3 | 213.2 | SA106GR.B | 7478A07T05 | 747800-007 | BR-1 |

# LIST OF MATERIAL

| | |
|---|---|
| JCP Project (JOB No. : 0-3515-20) | |
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | ( EQP ) T.K |
| Review Date : | (06FEB.17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A – 038 – | 00 | |

BILFAL HEAVY INDUSTRIES Ltd.
**AS BUILT**
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 2 | 10.12.'05 | REVISED AS MARKED 2 & 'AS BUILT' | KIRIT | HUSAN | SP |
| 1 | 06.04.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED 1 & ISSUED FOR CONSTRUCTION | RAJU | JAP/BPP | VINCENT |
| 0 | 19.01.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Rav/Raju | JAP/BPP | VINCENT |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليني السعودية للصناعات الثقيلة المحدودة

SCALE: 1:30
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY.....VINCENT.....
DATE....06.04.'05

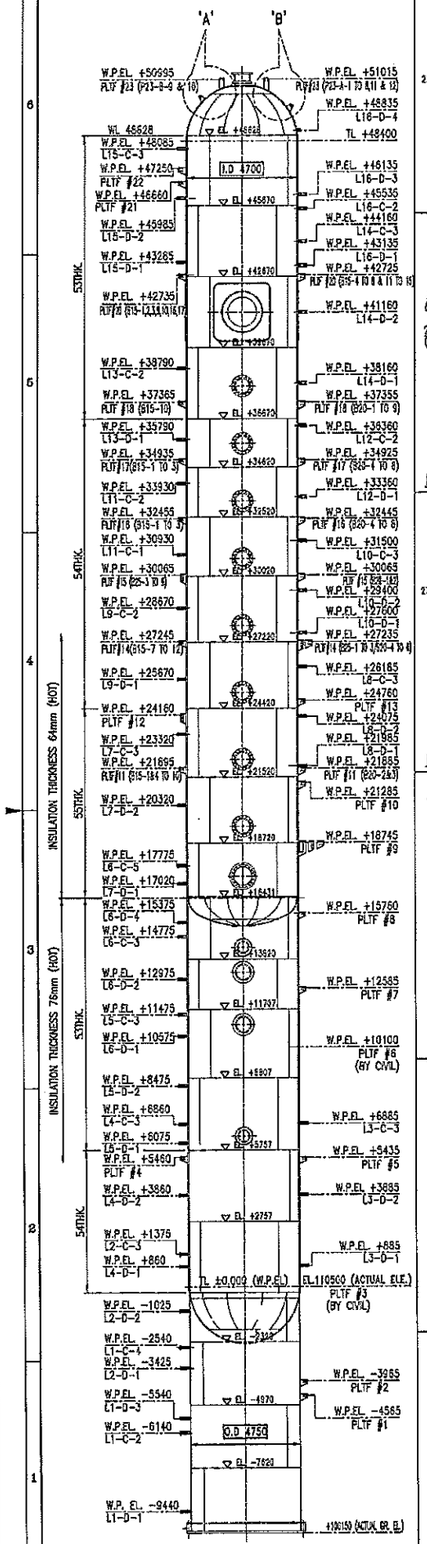
BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
VAPOR RETURN DISTRIBUTOR FOR NOZZLE 22

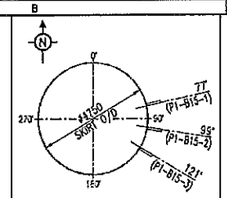
لايحل لأحد القيام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقامن شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

DRAWING NO. DA-7478-02-012 REV. 2

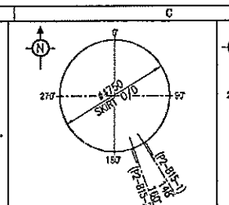
17-FEB-2012 AS BUILT



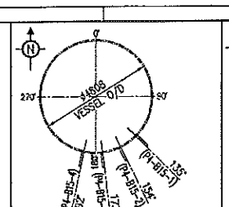

ORIENTATION OF PLATFORM CLIP
PLATFORM – #1 (TOS EL 105975)



ORIENTATION OF PLATFORM CLIP
PLATFORM – #2 (TOS EL 106575)



ORIENTATION OF PLATFORM CLIP
PLATFORM – #4 (TOS EL 116000)



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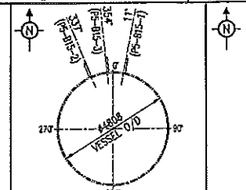
PLATFORM – #5 (TOS EL 115975)



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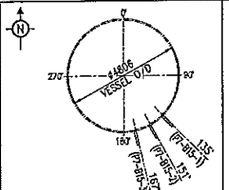
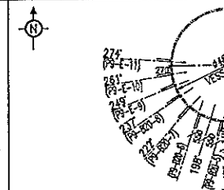
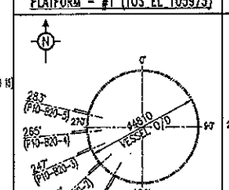
PLATFORM – #7 (TOS EL 123125)



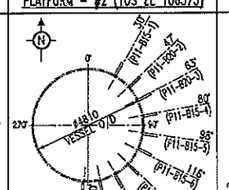
ORIENTATION OF PLATFORM CLIP
PLATFORM – #9 (TOS EL 129295)



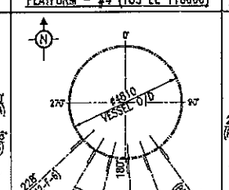
ORIENTATION OF PLATFORM CLIP
PLATFORM – #10 (TOS EL 131835)



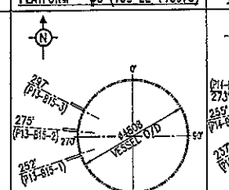
ORIENTATION OF PLATFORM CLIP
PLATFORM – #11 (TOS EL 132435)



ORIENTATION OF PLATFORM CLIP
PLATFORM – #12 (TOS EL 134700)

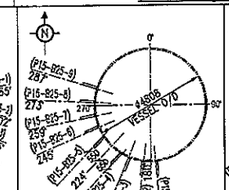


ORIENTATION OF PLATFORM CLIP
PLATFORM – #13 (TOS EL 135300)

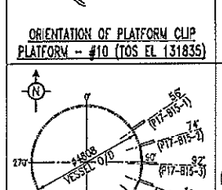


ORIENTATION OF PLATFORM CLIP
PLATFORM – #14 (TOS EL 137785)

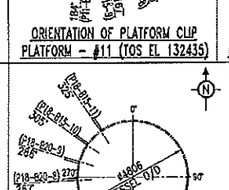
ORIENTATION OF PLATFORM CLIP
PLATFORM – #15 (TOS EL 140615)



ORIENTATION OF PLATFORM CLIP
PLATFORM – #16 (TOS EL 142995)



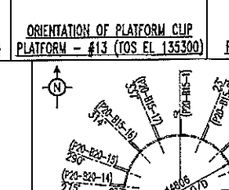
ORIENTATION OF PLATFORM CLIP
PLATFORM – #17 (TOS EL 145475)



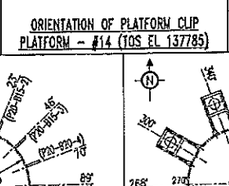
ORIENTATION OF PLATFORM CLIP
PLATFORM – #18 (TOS EL 147905)

DELETED

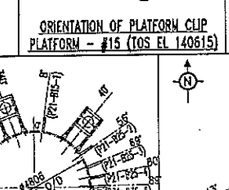
ORIENTATION OF PLATFORM CLIP
PLATFORM – #20 (TOS EL 153275)



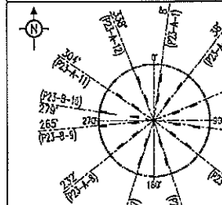
ORIENTATION OF PLATFORM CLIP
PLATFORM – #21 (TOS EL 157200)

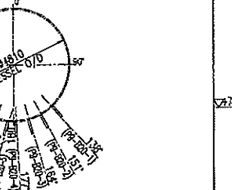


ORIENTATION OF PLATFORM CLIP
PLATFORM – #22 (TOS EL 157890)

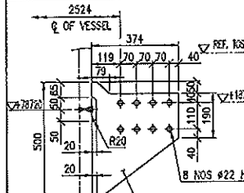


ORIENTATION OF PLATFORM CLIP
PLATFORM – #23 (TOS EL 161550)



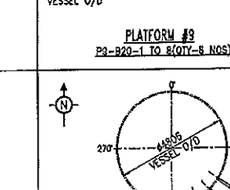



PLATFORM #9
P9-E-9 TO 11(QTY-3 NOS)




PLATFORM #9
P9-B20-1 TO 8(QTY-8 NOS)

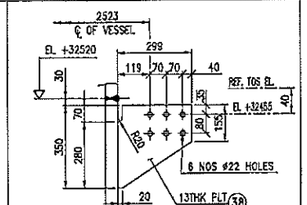
DELETED



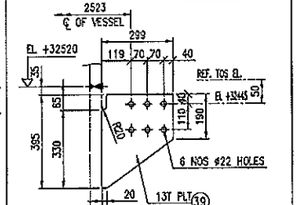
ORIENTATION OF PLATFORM CLIP
PLATFORM – #8 (TOS EL 126300)



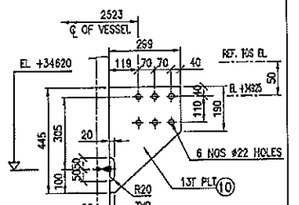
ORIENTATION OF PLATFORM CLIP
PLATFORM – #23 (TOS EL 161550)



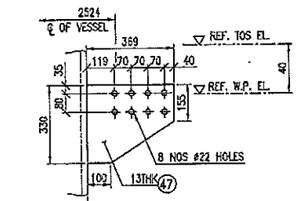

PLATFORM #16
P16-B18-1 TO 3(QTY-3 NOS)



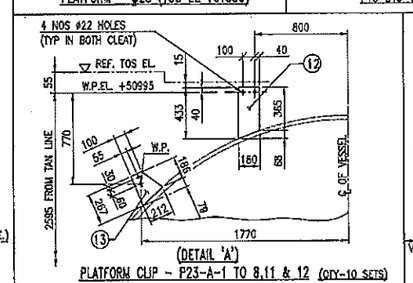

PLATFORM #16
P16-B20-4 TO 8(QTY-5 NOS)



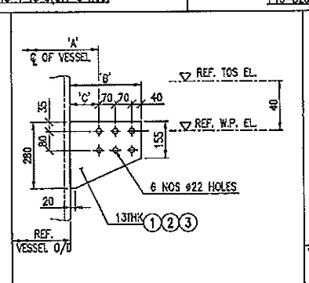

PLATFORM #17
P17-B20-4 TO 8(QTY-5 NOS)




PLATFORM #12
P12-F-1 TO 6(QTY-6 NOS)

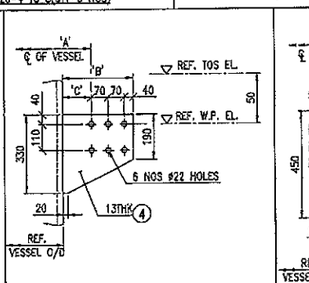



(DETAIL 'A')
PLATFORM CLIP – P23-A-1 TO 8,11 & 12 (QTY-10 SETS)



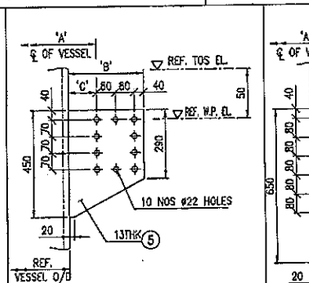

PLATFORM CLIP TYPE 'B15'

| PLT. NO. | CLIP NO. | DIMENSION A | B | C | QTY. | POS. NO |
|---|---|---|---|---|---|---|
| PLT #1 | P1-B15-1 TO 3 | 2480 | 285 | 105 | 3 | ① |
| PLT #2 | P2-B15-1 & 2 | 2480 | 285 | 105 | 2 | |
| PLT #4 | P4-B15-1 TO 4 | 2535 | 311 | 131 | 4 | |
| PLT #5 | P5-B15-1 TO 3 | 2535 | 311 | 131 | 3 | ② |
| PLT #7 | P7-B15-1 TO 3 | 2534 | 311 | 131 | 3 | |
| PLT #8 | P8-B15-1 TO 4 | 2534 | 311 | 131 | 4 | |
| PLT #11 | P11-B15-1 & 4 TO 10 | 2524 | 299 | 119 | 8 | |
| PLT #13 | P13-B15-1 TO 3 | 2523 | 299 | 119 | 3 | ③ |
| PLT #17 | P17-B15-1 TO 3 | 2523 | 299 | 119 | 3 | |
| PLT #18 | P18-B15-10 & 11 | 2522 | 293 | 119 | 2 | |
| PLT #21 | P21-B15-1 & 6 & 7 | 2522 | 293 | 119 | 3 | |



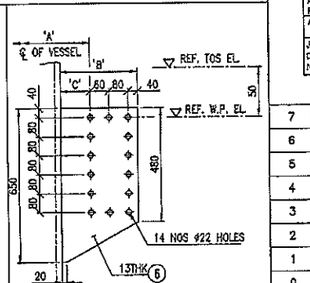

PLATFORM CLIP TYPE 'B20'

| PLT. NO. | CLIP NO. | DIMENSION A | B | C | QTY. | POS. NO |
|---|---|---|---|---|---|---|
| PLT #11 | P11-B20-2 & 3 | 2524 | 299 | 119 | 2 | ④ |
| PLT #10 | P10-B20-1 TO 5 | 2524 | 299 | 119 | 5 | |
| PLT #19 | P18-B20-1 TO 9 | 2522 | 293 | 119 | 9 | |
| PLT #22 | P22-B20-1 TO 6 | 2522 | 293 | 119 | 6 | |



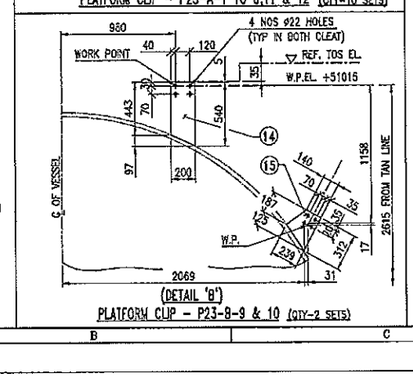

PLATFORM CLIP TYPE 'B25'

| PLT. NO. | CLIP NO. | DIMENSION A | B | C | QTY. | POS. NO |
|---|---|---|---|---|---|---|
| PLT #21 | P21-B25-2 TO 4 | 2522 | 319 | 119 | 3 | ⑤ |




PLATFORM CLIP TYPE 'B35'

| PLT. NO. | CLIP NO. | DIMENSION A | B | C | QTY. | POS. NO |
|---|---|---|---|---|---|---|
| PLT #21 | P21-B35-5 | 2522 | 319 | 119 | 1 | ⑥ |




(DETAIL 'B')
PLATFORM CLIP – P23-8-9 & 10 (QTY-2 SETS)

NOTES :

1) ALL DIMENSIONS ARE IN mm
2) ALL ELEVATIONS ARE IN mm
3) ALL TOS ELEVATIONS ARE REFER FROM ELEVATION INDICATED IN JGC DWG. D-032-1352-060 REV. C02
4) ALL WORK POINT ELEVATIONS (WP EL) ARE REFER FROM THE BOTTOM TAN LINE ELEVATION OF VESSEL (CONSIDERED ±0.00)

6) ALL WELDS ARE 10mm FILLET CONT. (UNLESS NOTED OTHERWISE)

REFERENCE DRAWINGS (BSHI) :

1) FOR GENERAL ARRANGEMENT REFER DRG. – DA-7478-02-001 REV.3
2) FOR LIST OF MATERIALS REFER DRG. – DA-7478-02-013 SHT 2 OF 2 REV. 3

FOR DESIGN REFERENCE DRAWINGS (JGC) :

1) PLATFORM & LADDER ELEVATION – D-032-1352-060 REV. C02
2) PLATFORM & LADDER LAYOUT – D-032-1352-060 REV. C02
– D-032-1352-051 TO 064 REV. C02
3) STANDARD DRAWING OF PLATFORM CLIP – D-000-1352-002 REV. C01
4) STANDARD DRAWING OF LADDER CLIP – D-000-1352-008 REV. C02

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | A9 |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | |
| RESPONSIBLE DEPT./PERSON : | ( PDT ) |
| Review Date : | ( 06 FEB. 14 ) |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to
Approval or review hereunder shall not be construed to relieve Supplier/Sub-Supplier of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A | – 039 | – 00 |

BILFAL HEAVY INDUSTRIES LTD.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 7 | 19.12.05 | 'AS BUILT' | Ganesh | | |
| 6 | 14.12.05 | REVISED AS PER CLIENT'S COMMENTS AS NKO, (6) | Sunil | JACOB | SUDHIR |
| 5 | 14.09.05 | REVISED AS PER CLIENT'S COMMENTS | Sunil | JACOB | SUDHIR |
| 4 | 07.09.05 | REVISED AS PER CLIENT'S COMMENTS | Sunil | JACOB | SUDHIR |
| 3 | 13.08.05 | REVISED AS PER CLIENT'S COMMENTS | Sunil | JACOB | SUDHIR |
| 2 | 4.08.05 | REVISED AS PER CLIENT'S COMMENTS & ISSUED FOR CONSTRUCTION | Sunil | JACOB SUDHIR | VINCENT |
| 1 | 14.07.05 | REVISED AS PER CLIENT'S COMMENTS & ISSUED FOR APPROVAL | Sunil | JACOB SUDHIR | VINCENT |
| 0 | 06.06.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Sunil | JACOB SUDHIR | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلفالي السعودية

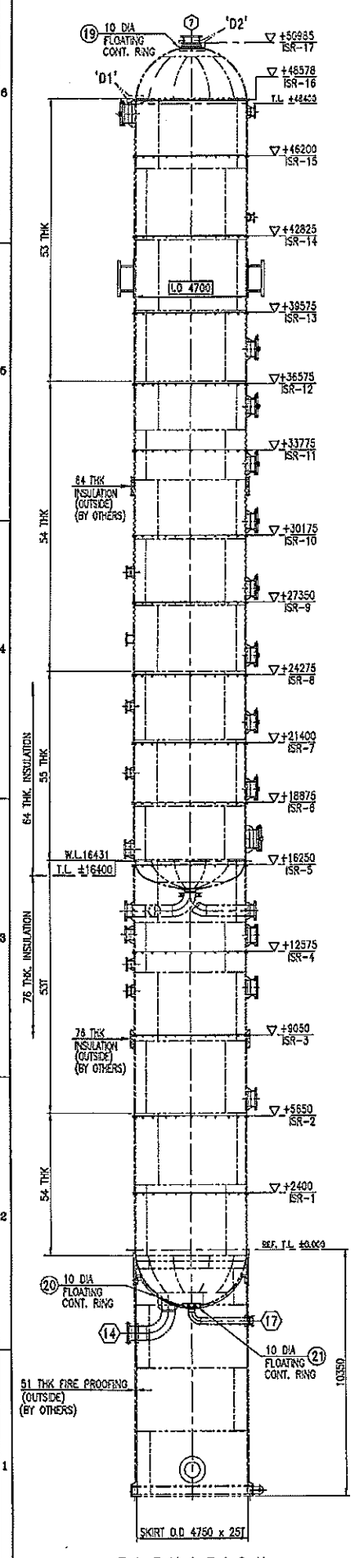
SCALE: 1 : 125
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY.....VINCENT
DATE.....4.09.05

BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

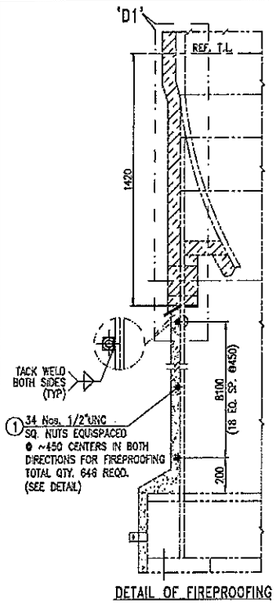
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
CLIPS FOR PLATFORM & LADDER
DRAWING NO.
DA-7478-02-013
SHEET 1 OF 2
REV. 7

الحق الأحمد الكامل بالتاج هذا الرسم الهندسي كتبعة أو جزئياً أو استخدامها لأي غرض إلا للعميل على مرافقة كتابية مسبقة من شركة بلفال للصناعات الثقيلة السعودية.

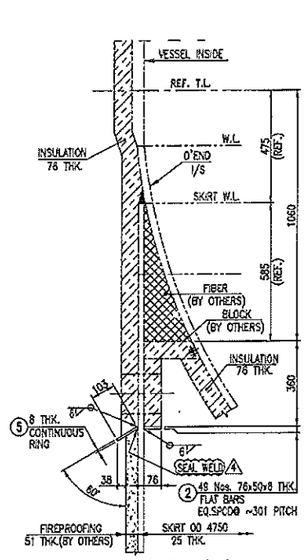
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART, NOR EXPLOITED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.



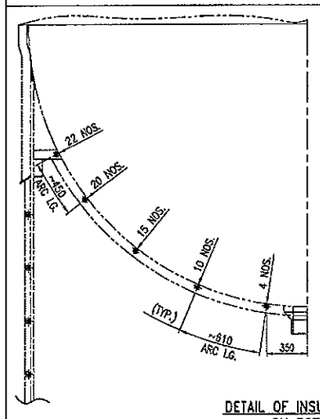

ELEVATION


'D1'
REF. T.L
1420
TACK WELD BOTH SIDES (TYP)
34 Nos. 1/2"UNC SQ. NUTS EQUISPACED @ ~450 CENTERS IN BOTH DIRECTIONS FOR FIREPROOFING TOTAL QTY. 648 REQD. (SEE DETAIL)
B100 (18 EQ. SP. @450)
200

DETAIL OF FIREPROOFING

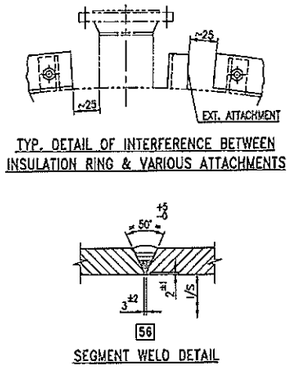



DETAIL 'D1' (FOR FIREPROOFING)




DETAIL OF INSULATION SQ NUTS ON BOTTOM HEAD

DETAIL Pos.NO.6 (1/2"UNC SQ. NUT.)

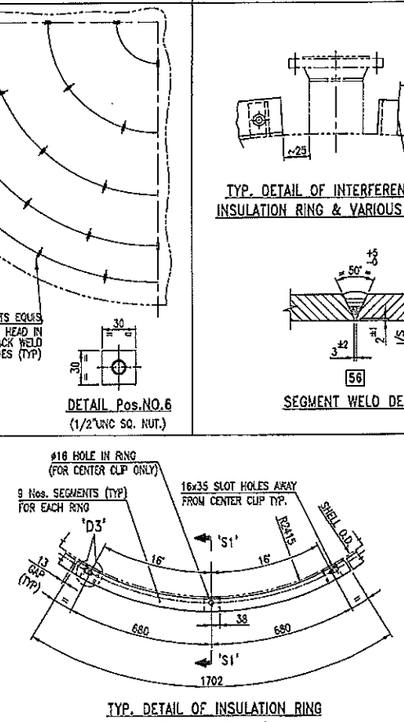



TYP. DETAIL OF INTERFERENCE BETWEEN INSULATION RING & VARIOUS ATTACHMENTS

SEGMENT WELD DETAIL

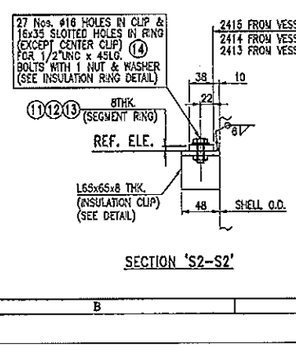

27 Nos. ø16 HOLES IN CLIP & 16x35 SLOTTED HOLES IN RING (EXCEPT CENTER CLIP) (14) FOR 1/2"UNC x 45LG. BOLTS WITH 1 NUT & WASHER (SEE INSULATION RING DETAIL)
2414 FROM VESSEL C.L FOR ISR-1 & 2
2413 FROM VESSEL C.L FOR ISR-3,4 & 5
42
10
22
8THK. (SEGMENT RING) (8) (9)
REF. ELE.
61°
L65x65x8 THK. (INSULATION CLIP) (SEE DETAIL)
64
SHELL O.D

SECTION 'S1-S1'

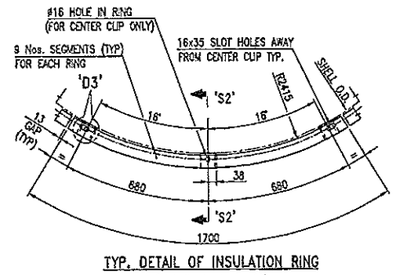



TYP. DETAIL OF INSULATION RING (FOR ISR-1 TO ISR-5)

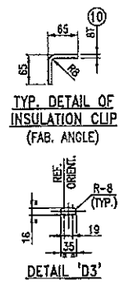


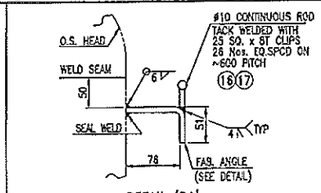


27 Nos. ø16 HOLES IN CLIP & 16x35 SLOTTED HOLES IN RING (EXCEPT CENTER CLIP) (14) FOR 1/2"UNC x 45LG. BOLTS WITH 1 NUT & WASHER (SEE INSULATION RING DETAIL)
2415 FROM VESSEL C.L FOR ISR-6,7 & 8
2414 FROM VESSEL C.L FOR ISR-9,10 & 11
2413 FROM VESSEL C.L FOR ISR-12,13,14&15
38
10
22
8THK. (SEGMENT RING) (11) (12) (13)
REF. ELE.
61°
L65x65x8 THK. (INSULATION CLIP) (SEE DETAIL)
48
SHELL O.D

SECTION 'S2-S2'

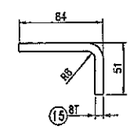



TYP. DETAIL OF INSULATION RING (FOR ISR-6 TO ISR-15)

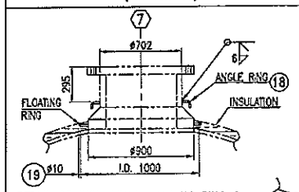


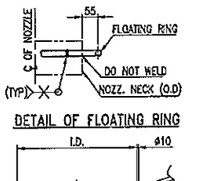

DETAIL 'D1' (FOR ISR-16)



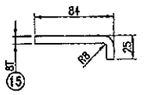

DETAIL OF FAB. ANGLE RING



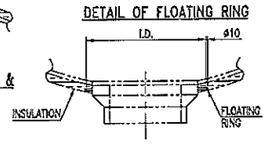

DETAIL OF INSULATION FLOATING RING & ANGLE RING DETAIL 'D2'




DETAIL OF FLOATING RING




DETAIL OF ANGLE RING




DETAIL OF INSULATION FLOATING RING

| NOZZLE MARK | SIZE NPS. | ID | QTY. | POS. |
|---|---|---|---|---|
| 14 | 24" | 1050 | 1 | (20) |
| 17 | 10" | 503 | 1 | (21) |

## NOTES :-

1) ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE SPECIFIED.
2) FOR GENERAL ARRANGEMENT & GENERAL NOTES REFER DRG. NO. DA-7478-02-001
3) ALL ANGLE TO BE FABRICATED FORM SA516GR70N PLATE.
4) FIREPROOFING NUTS SHALL NOT BE WELDED IF FOULING WITH EXTERNAL ATTACHMENTS.

** - SA307GRB + SA563GRA + CS

TOTAL WT. = 1106.20 Kgs.

| REF. | POS | QTY PER ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 21 | 1 | ROD ø10 | 1612 | 0 | 0.0 | 1.0 | 1.0 | A36 | 7478A1SP01 | 747800-019 | FLOATING RING |
| | 20 | 1 | ROD ø10 | 3362 | 0 | 0.0 | 2.1 | 2.1 | A36 | 7478A1SP01 | 747800-019 | FLOATING RING |
| | 19 | 1 | ROD ø10 | 5173 | 0 | 0.0 | 2.0 | 2.0 | A36 | 7478A1SP01 | 747800-019 | FLOATING RING |
| | 18 | 1 | FAB. ANGLE(SEE DETAIL) | 2733 | 98 | 8.0 | 16.5 | 16.5 | SA516GR70N | 7478A03L02 | 747800-003 | IN SEGMENTS |
| | 17 | 1 | ROD ø10 | 15601 | 0 | 0.0 | 9.7 | 9.7 | A36 | 7478A1SP01 | 747800-019 | |
| | 16 | 26 | FLAT BARS | 25 | 25 | 8.0 | 0.04 | 1.1 | SA516GR70N | 7478A03L02 | 747800-003 | SUPP FOR ISR |
| | 15 | 1 | INS. ANGLE RING (SEE DETAIL) | 15627 | 122 | 8.0 | 119.8 | 119.8 | SA516GR70N | 7478A03L02 | 747800-003 | IN SEGMENTS |
| | 14 | 426 | B+NT+W 1/2"UNC | 45 | 0 | 0.0 | 0.1 | 42.6 | ** | 7478A15B01 | 747800-045 | 45x21 SPARE |
| | 13 | 4 | ISR 004902/D4825 | 0 | 0 | 8.0 | 40.4 | 161.6 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 12 | 3 | ISR 004904/D4826 | 0 | 0 | 8.0 | 40.4 | 121.2 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 11 | 3 | ISR 004905/D4830 | 0 | 0 | 8.0 | 40.4 | 121.2 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 10 | 270 | FAB. ANGLE (SEE DETAIL) | 117 | 45 | 8.0 | 0.4 | 108.0 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 9 | 3 | ISR 004910/D4828 | 0 | 0 | 8.0 | 40.4 | 121.2 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 8 | 2 | ISR 004912/D4828 | 0 | 0 | 8.0 | 40.4 | 80.8 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 7 | 135 | FAB. ANGLE (SEE DETAIL) | 117 | 64 | 8.0 | 0.5 | 67.5 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 6 | 71 | INSULATION CLEATS | 30 | 30 | 8.0 | 0.06 | 4.3 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 5 | 1 | CONE 4751/4928 | 0 | 0 | 8.0 | 58.0 | 58.0 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 4 | | DELETED | | | | | | | | | |
| | 3 | | DELETED | | | | | | | | | |
| | 2 | 48 | FLAT BARS | 76 | 50 | 8.0 | 0.3 | 14.7 | SA516GR70N | 7478A03L02 | 747800-003 | |
| | 1 | 646 | 1/2"UNC SQ. NUTS | 0 | 0 | 0.0 | 0.02 | 12.9 | SA563GRA | 7478A19B01 | 747600-019 | |

LIST OF MATERIAL

JCP Project (JOB No. : 0-3515-20)

| | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( — ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | EQP/VK |
| Review Date : | 06 FEB 17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to
Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of its responsibilities and liability under the contract.

| JGC DOC. NO. | DRG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | 2151-101-A | 040 | 00 |

BILFAL HEAVY INDUSTRIES LTD.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 5 | 19.12.05 | 'AS BUILT' | [illegible] | [illegible] | [illegible] |
| 4 | 13.12.05 | REVISED AS PER CLIENT COMMENTS AS MARKED △ | KARTHIK | JACOB | SUDHIR |
| 3 | 01.08.05 | REVISED AS PER CLIENT COMMENTS AS MARKED △ & ISSUED FOR CONSTRUCTION | KARTHIK | JAP/SP | VINCENT |
| 2 | 11.07.05 | REVISED AS PER CLIENT COMMENTS AS MARKED △ & ISSUED FOR APPROVAL | KARTHIK | JAP/SP | VINCENT |
| 1 | 20.06.05 | REVISED AS PER CLIENT COMMENTS AS MARKED △ & ISSUED FOR REAPPROVAL | KARTHIK | JAP/SP | VINCENT |
| 0 | 14.05.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | KARTHIK | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليالي السعودية

| | |
|---|---|
| SCALE: | 1 : 125 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY.....VINCENT..... | |
| DATE..01.08.05... | |

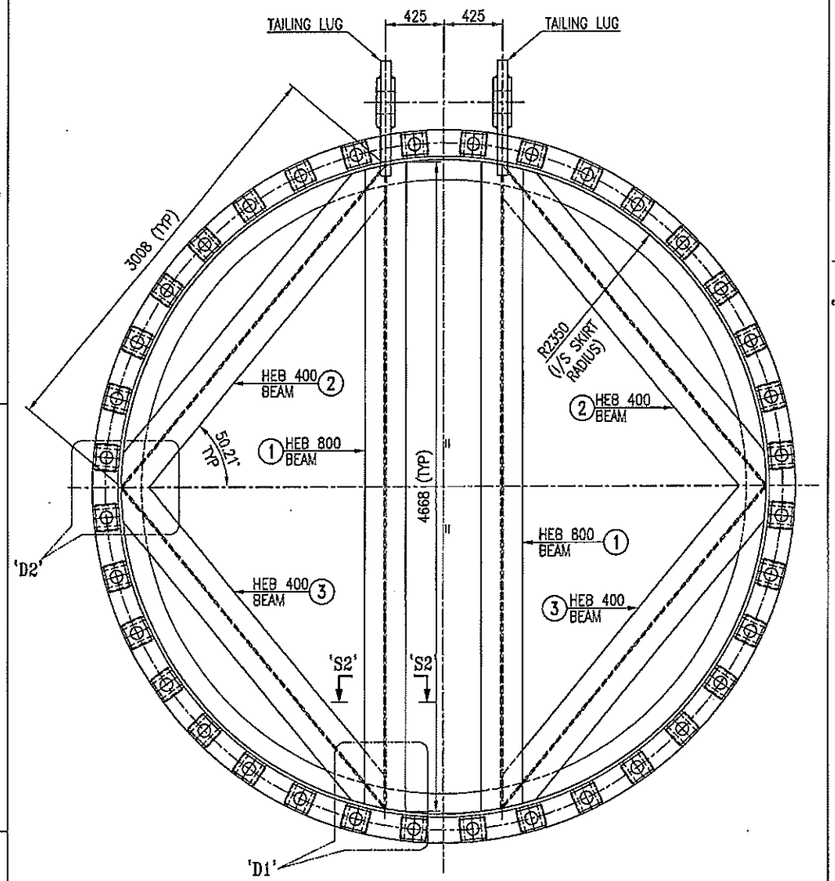
BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
CLIPS FOR PIPE SUPPORTS/GUIDES/INSULATION/FIREPROOFING

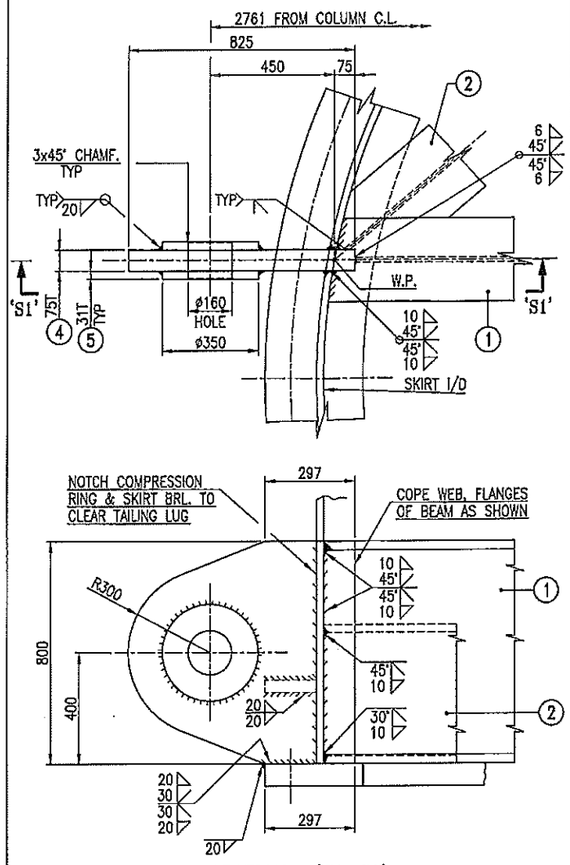
DRAWING NO.
DA-7478-02-014
SHEET 1 OF 4
REV. 5

هذا الرسم ملك لشركة بلفال للصناعات الثقيلة ولا يجوز أن يستخدم أو يعاد إنتاجه بأي طريقة إلا بالحصول على موافقة كتابية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EXPLOITED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BELLELI SAUDI HEAVY IND. LTD.

SHEET SIZE : 841x594

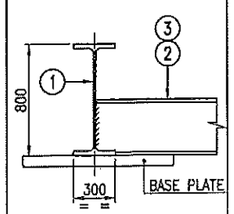



DETAIL OF TAILING LUG & STIFFENERS
(FOR ORIENTATION OF TAILING LUG REF. DWG. No. DA-7478-02-001)

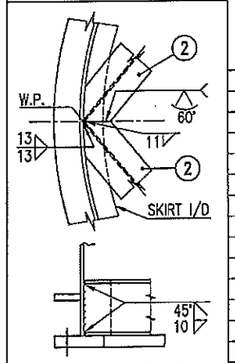



SECTION : 'S1-S1'
(DETAIL OF TAILING LUG)

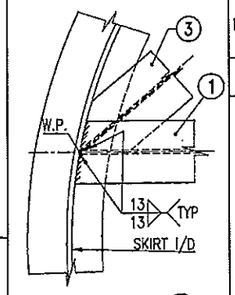



TYP. SECTION : 'S2-S2'




DETAIL : 'D2'




DETAIL : 'D1'

NOTES :
1. GREASE SHALL BE APPLIED BETWEEN THE TRUNNION AND THE SLEEVE FOR SMOOTH ROTATION.
2. IF REQUIRED, TRUNNION O/D AT SLING LOCATION SHALL BE MACHINED TO MAINTAIN THE CIRCULARITY.
3. ITEM No. 6, 7, 12 & 13 TO BE WELDED TO COLUMN BEFORE PWHT. ALL REMAINING ITEMS (i.e. 8 TO 11) TO BE WELDED AFTER PWHT.

TOTAL WT. = 15840.4 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | 2 | STIFFENER PLATE | 1128 | 817 | 42.0 | 303.8 | 607.6 | SA516GR70N | 7478A14L01 | 747800-014 | |
| | 12 | 4 | STIFFENER PLATE | 750 | 543 | 42.0 | 134.3 | 537.2 | SA516GR70N | 7478A14L01 | 747800-014 | |
| | 11 | 2 | SLEEVE | 3977 | 280 | 10.0 | 87.4 | 174.8 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 10 | 2 | COVER PLT.-1760/1253 | 0 | 0 | 42.0 | 395.5 | 791.0 | SA516GR70N | 7478A14L01 | 747800-014 | |
| | 9 | 2 | OUTER TRUNNION | 5438 | 537 | 31.0 | 710.6 | 1421.2 | SA516GR70N | 7415A01L04R002 | STOCK | |
| | 8 | 2 | COVER PLATE-ø1700 | 0 | 0 | 50.0 | 890.9 | 1781.8 | SA516GR70N | 7478A14L04 | 747800-014 | |
| | 7 | 2 | INNER TRUNNION | 3738 | 817 | 60.0 | 1438.4 | 2876.8 | SA516GR70N | 7478A14L05 | 747800-014 | |
| | 6 | 2 | TRUNNION PAD | 2660 | 2400 | 25.0 | 1253.0 | 2506.0 | SA516GR70N | 7478A01L63 | 747800-001 | |
| | 5 | 4 | EYE PAD - 350/160 | 0 | 0 | 31.0 | 18.5 | 74.0 | SA516GR70N | 7415A01L04R002 | STOCK | |
| | 4 | 2 | TAILING LUG | 800 | 825 | 75.0 | 388.6 | 777.2 | SA516GR70N | 7415A05L09R001 | STOCK | |
| | 3 | 2 | BEAM HEB 400 | 3000 | 0 | 0.0 | 465.0 | 930.0 | A36 | 7478A30P01 | 747800-030 | |
| | 2 | 2 | BEAM HEB 400 | 2957 | 0 | 0.0 | 458.4 | 916.8 | A36 | 7478A30P01 | 747800-030 | |
| | 1 | 2 | BEAM HEB 800 | 4668 | 0 | 0.0 | 1223.0 | 2446.0 | A36 | 7478A30P03 | 747800-030 | |

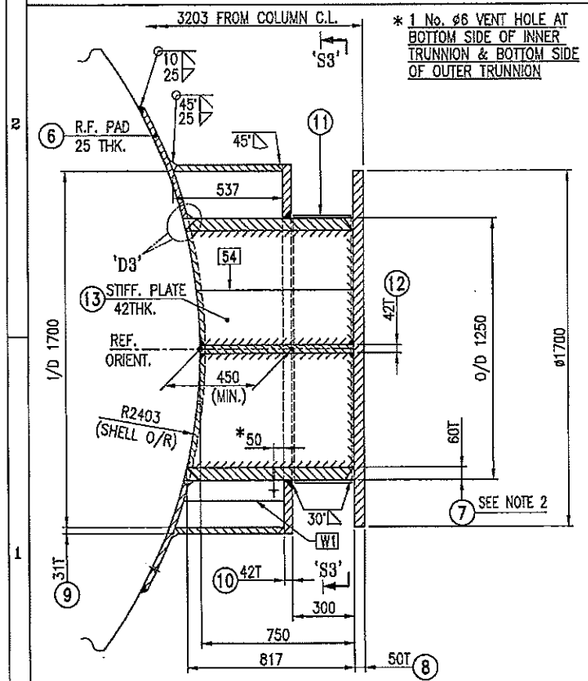
LIST OF MATERIAL

| | |
|---|---|
| JCP Project (JOB No. : 0-3515-20) | |
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( — ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) |
| Review Date : | (06 FEB. 17 |

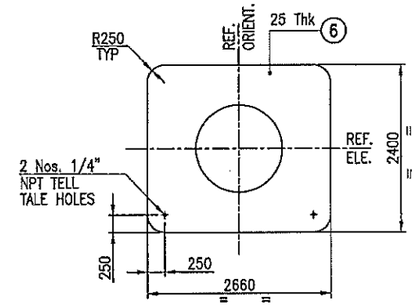
A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to
Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | - 2151-101-A - 041 - | 00 | |

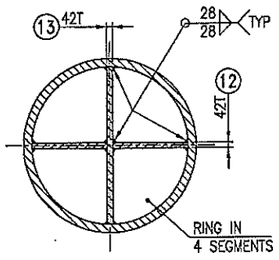
BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....



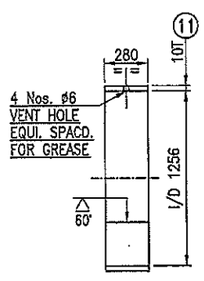

DETAIL OF LIFTING TRUNNION
(QTY : 2 Nos.) SEE NOTE 3
(FOR ORIENTATION OF LIFTING TRUNNION REF. DWG. No. DA-7478-02-001)



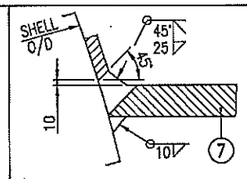

DETAIL OF POS. 6



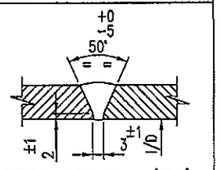

SECTION : 'S3-S3'




DETAIL OF SLEEVE
(REFER NOTE 1)




DETAIL : 'D3'




WELD DETAIL : 'W1'

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | 'AS BUILT' | KIRIT | HUSAIN | SP |
| 2 | 14.12.'05 | REVISED AS MARKED ② & ISSUED FOR FINAL APPROVAL | KIRIT | HUSAIN | SP |
| 1 | 24.07.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED ① & ISSUED FOR CONSTRUCTION | KIRIT | JAP/SP | VINCENT |
| 0 | 26.04.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | KIRIT | JAP/SP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليالي السعودية للصناعات الثقيلة المحدودة

| | |
|---|---|
| SCALE: | 1 : 30 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE.... | 24.07.'05 |

BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

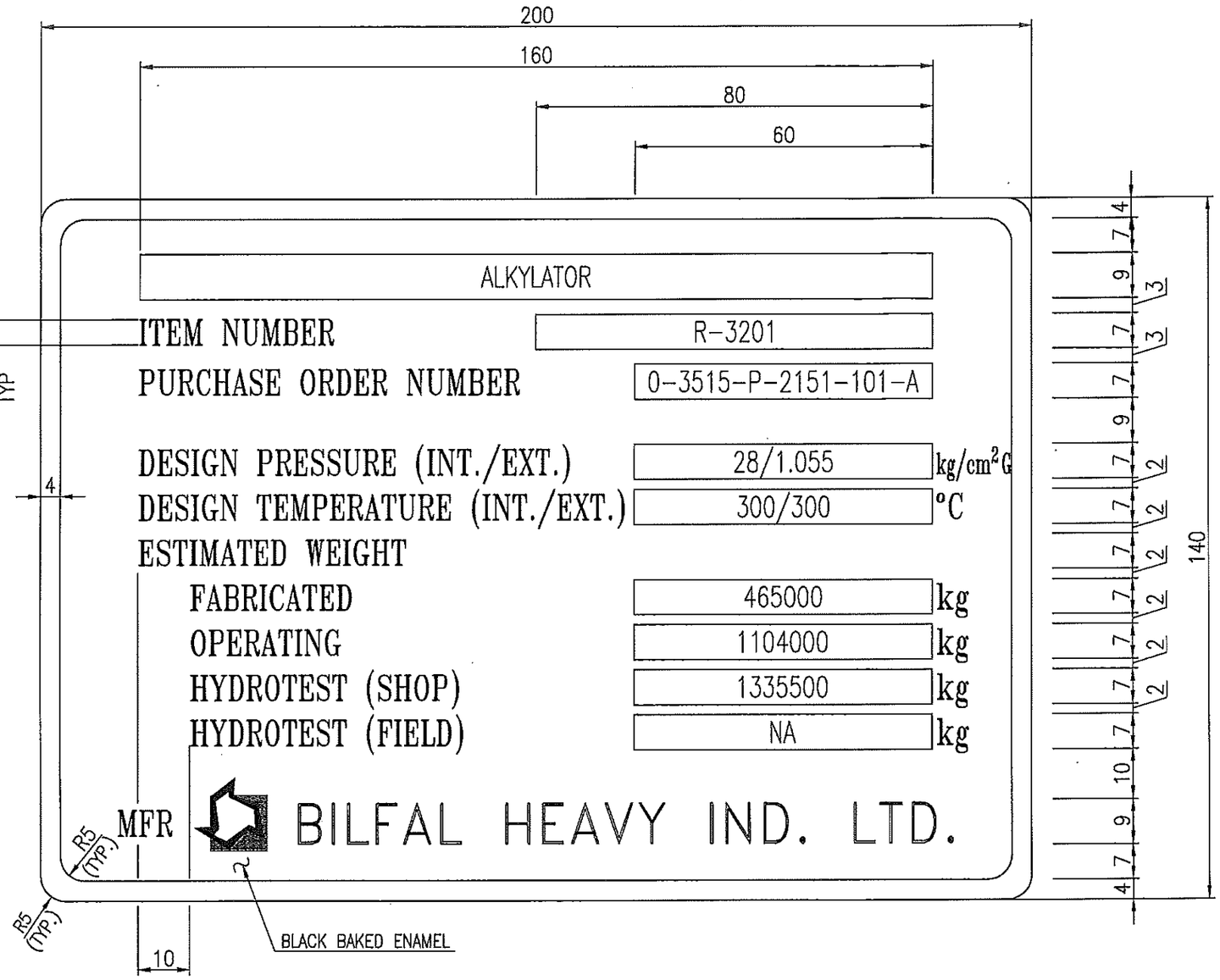
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
LIFTING TRUNNION & TAILING LUG DETAILS

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقاً من شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

DRAWING NO. DA-7478-02-015 REV. 3

SHEET SIZE : 594x420

17-FEB-2015 10:04:30 AS BUILT




NOTES :

1. ALL DIMENSIONS ARE IN mm., UNLESS OTHERWISE SPECIFIED.
2. MATERIAL : SS-304, 3mm THK.
3. ALL LETTERING, EDGES & BLOCKS TO BE RAISED POLISH FACE.
4. STAMPING ON BLOCKS TO BE 0.3 mm DEPTH.

BILFAL HEAVY INDUSTRIES Ltd.

**AS BUILT**

CERTIFIED BY.....

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP ) |
| Review Date : | ('06 FEB)17 |
| A : Approved without Comment; B: Approved/Reviewed R : Resubmit Incorporating comments; F: Not Subject to | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract. | |

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A | – 042 | – 00 |

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 4 | 19.12.05 | 'AS BUILT' | KIRIT | HUSAIN | SP |
| 3 | 29.11.05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠3 | KIRIT | HUSAIN | SP |
| 2 | 27.10.05 | ISSUED FOR FINAL APPROVAL | KIRIT | JAP | SP |
| 1 | 28.08.05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠1 & ISSUED FOR CONSTRUCTION | KIRIT | JAP | SP |
| 0 | 05.01.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | KIRIT | JAP/BPP | VINCENT |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلياني السعودية للصناعات الثقيلة المحدودة

SCALE: 1 : 1

CLIENT: JGC CORPORATION, JAPAN

ORDER: 0-3515-P-2151-101-A

APPROVED FOR CONSTRUCTION BY.....SP..... DATE.....28.08.05

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY

JCP PROJECT, AL JUBAIL, SAUDI ARABIA

ALKYLATOR (R-3201)

CLIENT NAME PLATE

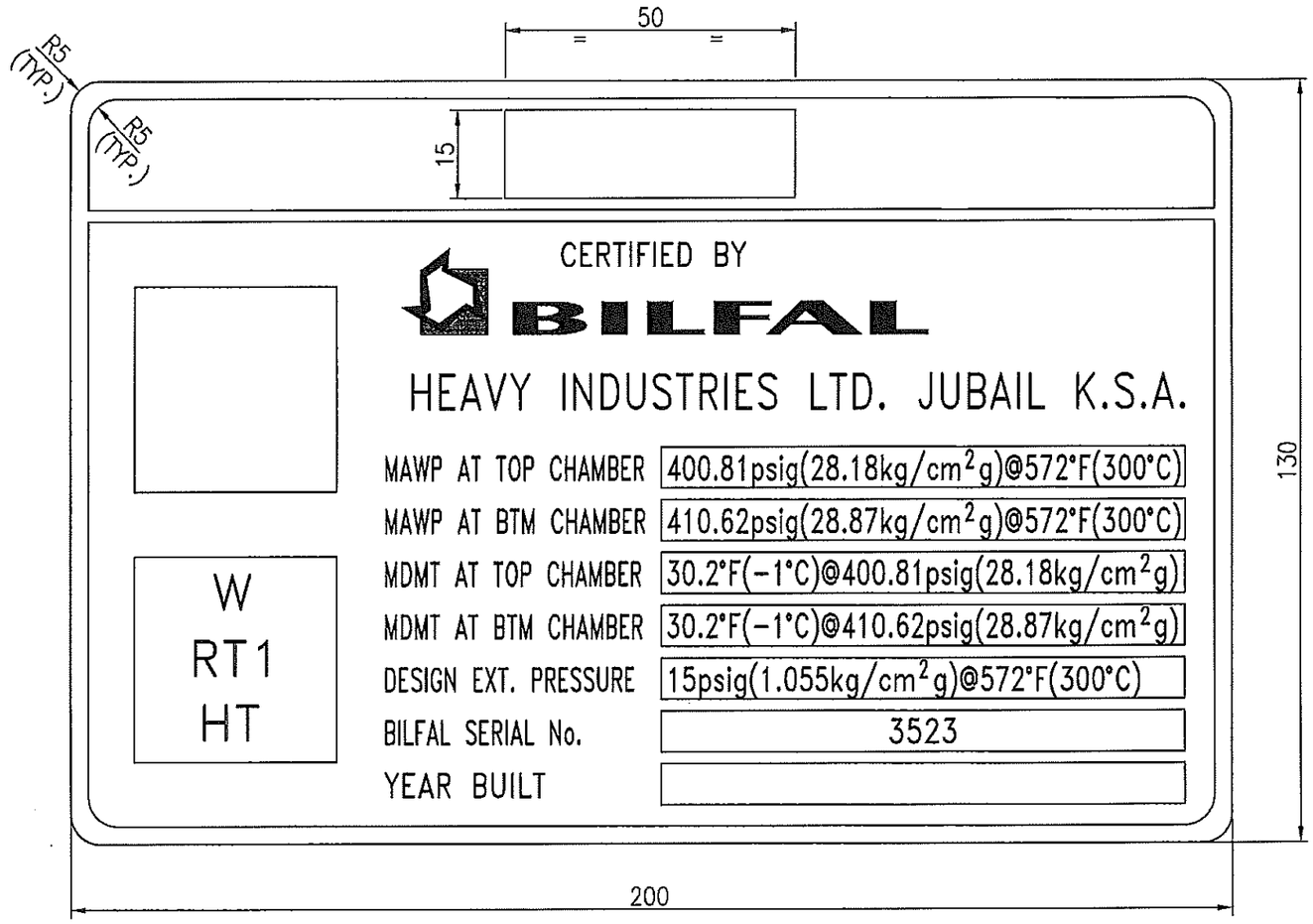
لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو إستخدامها لأي غرض إلا بالحصول على موافقة خطية مسبقا من شركة بلفال للصناعات الثقيلة المحدودة.

THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

DRAWING NO. DA-7478-02-016 REV. 4

SHEET SIZE: 420x297

17-FEB-2006 AS BUILT DWG. NO. DA7478002016




NOTES :

1. NAME PLATE SHALL BE MARKED IN ACCORDING WITH ASME SECT. VIII DIV. 1 PARA UG 116.
2. MATERIAL : SS-304, 3 mm THK
3. EDGE, LETTERING & BLOCK FOR STAMPING SHALL BE PRODUCED BY ENGRAVING TO 0.3 MM DEEP (MIN) & BLACK ENAMELED.
4. BACK GROUND TO BE POLISHED TO FINE FINISH.
5. HEIGHT OF LETTERS : 4 mm MIN.
6. NATIONAL BOARD NUMBER, CODE STAMP(U-STAMP) & YEAR BUILT SHALL BE HARD STAMPED BY BILFAL AFTER FINAL INSPECTION.

BILFAL HEAVY INDUSTRIES Ltd.

**AS BUILT**

CERTIFIED BY.....

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP ) |
| Review Date : | ('06 FEB) IT |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A | – 043 | – 00 |

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.05 | `AS BUILT' | KIRIT | HUSAIN | SP |
| 2 | 14.12.05 | ISSUED FOR FINAL APPROVAL | KIRIT | HUSAIN | SP |
| 1 | 28.08.05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠ & ISSUED FOR CONSTRUCTION | KIRIT | JAP | SP |
| 0 | 19.01.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | KIRIT | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيليلي السعودية للصناعات الثقيلة المحدودة

SCALE: 1 : 1

CLIENT: JGC CORPORATION, JAPAN

ORDER: 0-3515-P-2151-101-A

APPROVED FOR CONSTRUCTION BY.....SP..... DATE.....28.08.05

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
ASME NAME PLATE

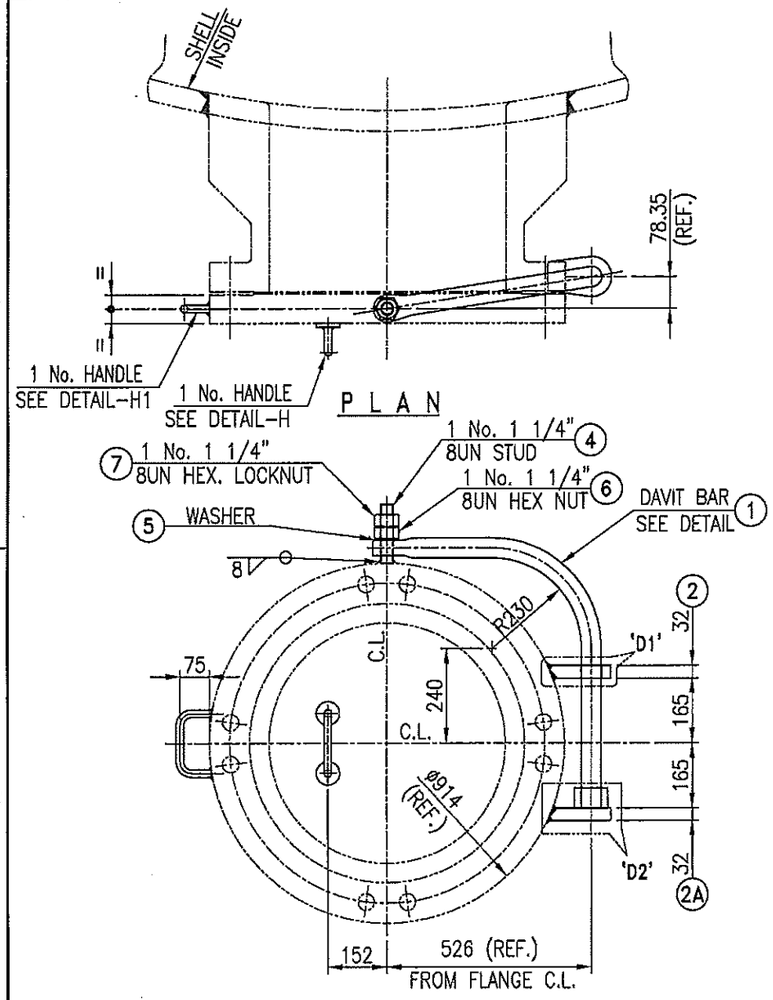
لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو إستخدامه لأي غرض إلا بالحصول على موافقة خطية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.

THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

DRAWING NO. DA-7478-02-017 REV. 3

SHEET SIZE: 420x297

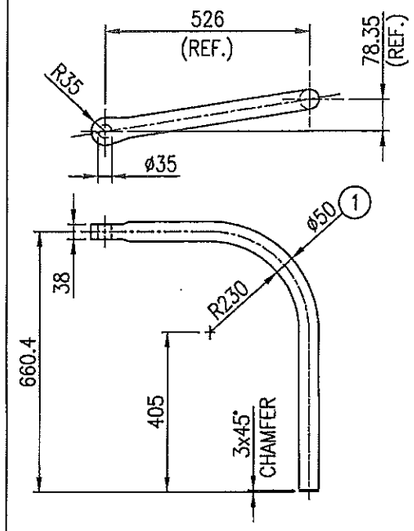
NDE DATE: 17-FEB-2006 AS BUILT



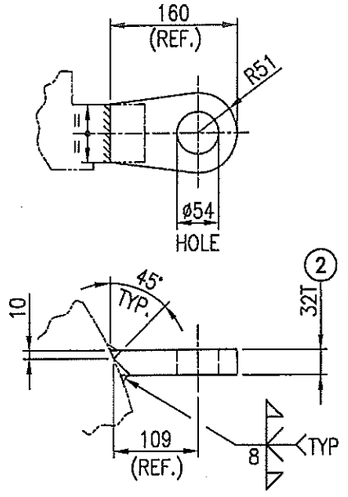

ELEVATION

TYP. DETAIL OF MANWAY DAVIT 1A TO 1K

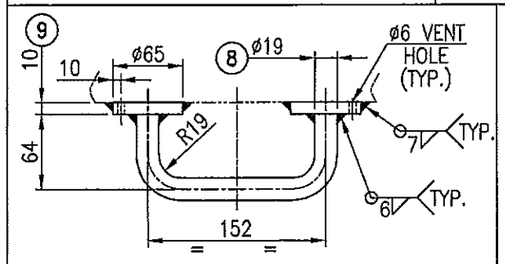
FOR MANWAY (24"-300#)



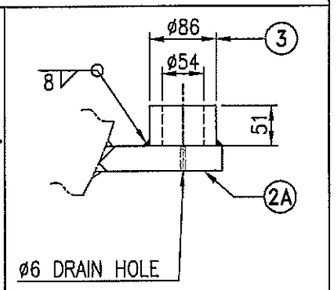

DETAIL OF DAVIT BAR



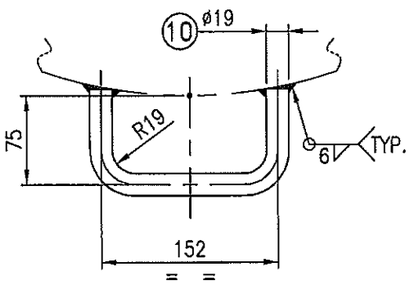

DETAIL : 'D1'




DETAIL-H




DETAIL : 'D2'




DETAIL-H1

NOTES :

1. FOR TRUE ORIENTATION OF DAVIT ARM REFER DRG. DA-7478-02-001. [2151-101-A-073]
2. ALL MOVABLE PARTS OF DAVIT ASSEMBLY TO BE THOROUGHLY LUBRICATED AND COATED WITH GREASE BEFORE DESPATCH.
3. DAVIT ASSEMBLY TO BE FITTED AND WELDED TO THE MANWAY AFTER THE BLIND FLANGE IS BOLTED TO THE MANWAY FLANGE.
4. ALL SHARP CORNERS TO BE ROUNDED OFF.
5. CLIENT REF. STD. No. GF-C87280-27

BILFAL HEAVY INDUSTRIES Ltd.

**AS BUILT**

CERTIFIED BY.....

QTY. GIVEN IN L.O.M. IS FOR ONE MANWAY ONLY
TOTAL QTY. REQUIRED = 11 Nos.

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP ) |
| Review Date : | ('06 FEB) 17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A – 044 – 00 | | |

TOTAL WT. = 31.1 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 1 | HANDLE ø19 | 290 | 0 | 0.0 | 0.6 | 0.6 | SA516GR70N | 7478A01L17 | 747800-001 | MACHINED FROM 22 THK. PLATE |
| | 9 | 2 | PAD ø65 | 0 | 0 | 10.0 | 0.3 | 0.6 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 8 | 1 | HANDLE ø19 | 284 | 0 | 0.0 | 0.6 | 0.6 | SA36 | 7478A19P02 | 747800-019 | |
| | 7 | 1 | LOCKNUT 1 1/4" 8UN | 0 | 0 | 0.0 | 0.3 | 0.3 | SA194GR2H | 7478A15B05 | 747800-015 | |
| | 6 | 1 | NT 1 1/4" 8UN | 0 | 0 | 0.0 | 0.3 | 0.3 | SA194GR2H | 7478A15B05 | 747800-015 | |
| | 5 | 1 | W 63.5/35/5T | 0 | 0 | 0.0 | 0.1 | 0.1 | CS | 3500A01L01 | STOCK | |
| | 4 | 1 | ST 1 1/4" 8UN | 150 | 0 | 0.0 | 1.0 | 1.0 | SA193GRB7 | 7478A15B05 | 747800-015 | |
| | 3 | 1 | RING 86/54/51T | 0 | 0 | 0.0 | 1.4 | 1.4 | SA36 | 7478A03L23 | 747800-003 | SEE DETAIL |
| | 2A | 1 | HINGE TAB | 0 | 0 | 32.0 | 4.2 | 4.2 | SA516GR70N | 7478A01L38 | 747800-001 | SEE DETAIL |
| | 2 | 1 | HINGE TAB | 0 | 0 | 32.0 | 4.2 | 4.2 | SA516GR70N | 7478A01L38 | 747800-001 | SEE DETAIL |
| | 1 | 1 | DAVIT BAR ø50 | 1118 | 0 | 0.0 | 17.8 | 17.8 | SA36 | 7478A19P04 | 747800-019 | SEE DETAIL |

LIST OF MATERIAL

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | 'AS BUILT' | KIRIT | HUSAIN | SP |
| 2 | 14.12.'05 | ISSUED FOR FINAL APPROVAL | KIRIT | HUSAIN | SP |
| 1 | 12.06.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED 1 & ISSUED FOR **CONSTRUCTION** | KALYAN | JAP/SP | VINCENT |
| 0 | 19.01.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | KIRIT | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

| | |
|---|---|
| SCALE: | 1 : 15 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE..... | 12.06.'05 |

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
MANWAT DAVIT-24" 300#

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقاً من شركة بلفال للصناعات الثقيلة المحدودة.

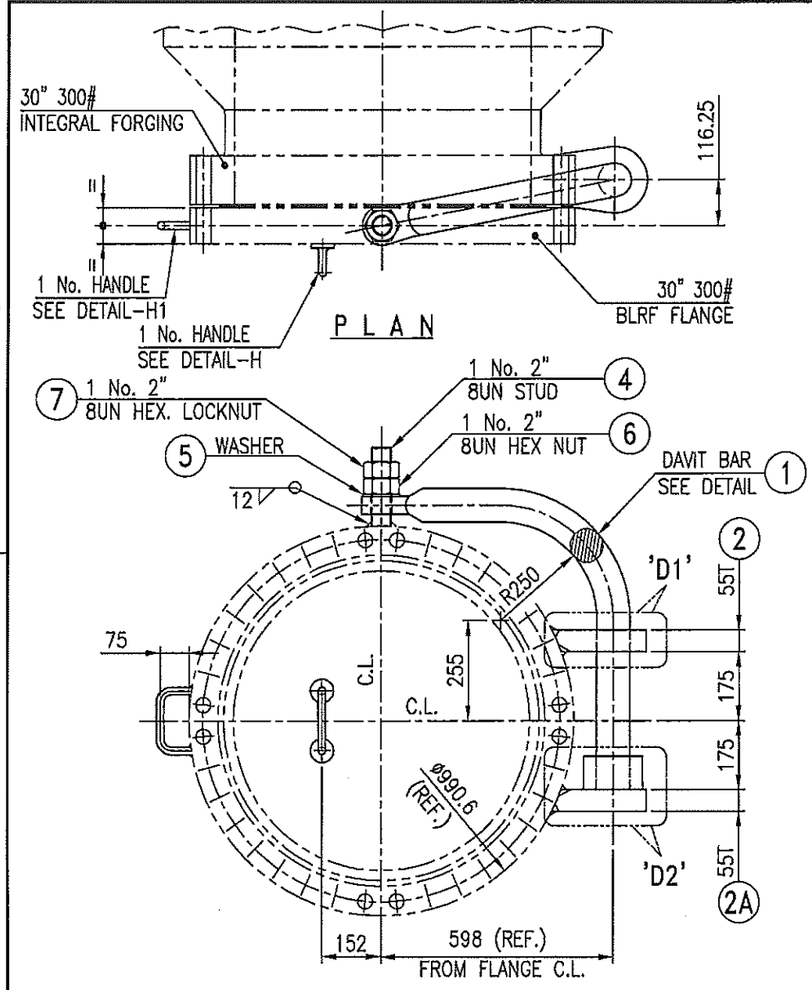
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

| DRAWING NO. | REV. |
|---|---|
| DA-7478-02-018 | 3 |

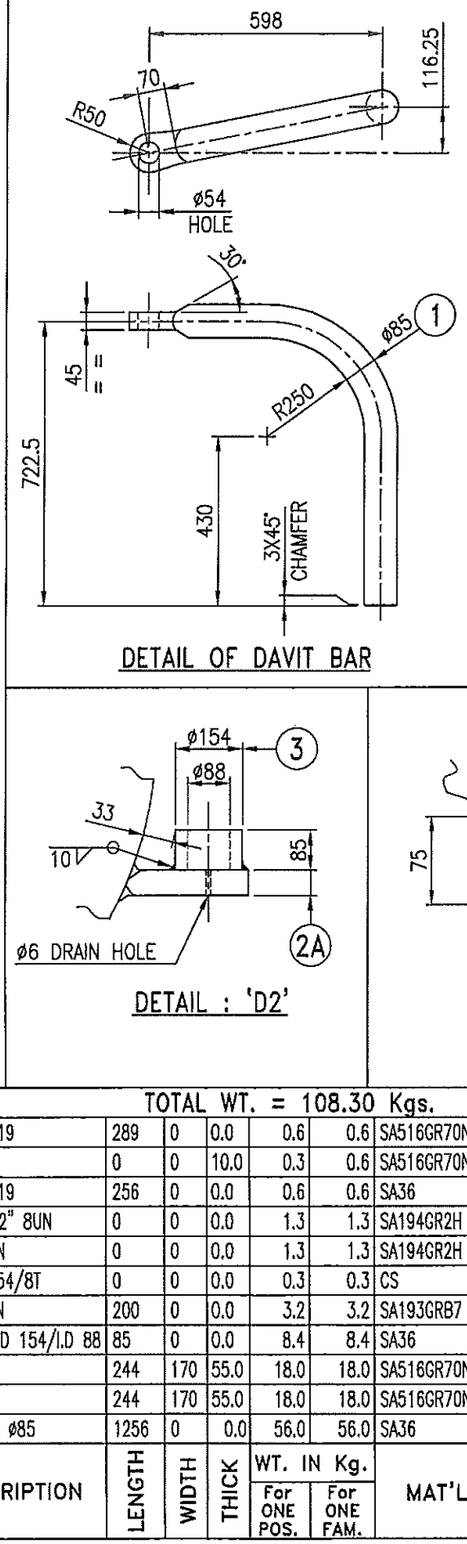
SHEET SIZE: 420x297

FILE NAME > DA7478020018

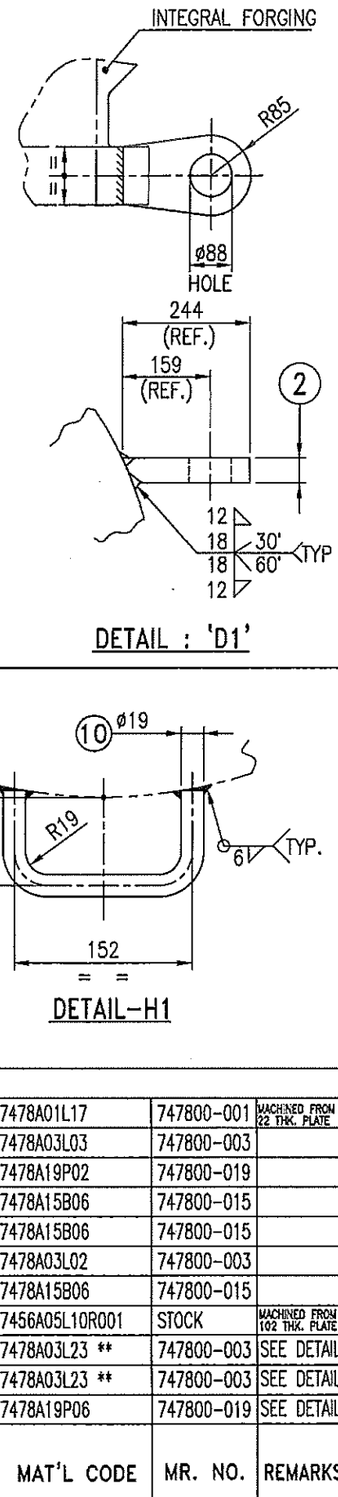
17-FEB-2006 AS BUILT




ELEVATION
TYP. DETAIL OF MANWAY DAVIT
FOR MANWAY (30"-300#)
2A 2B




DETAIL OF DAVIT BAR



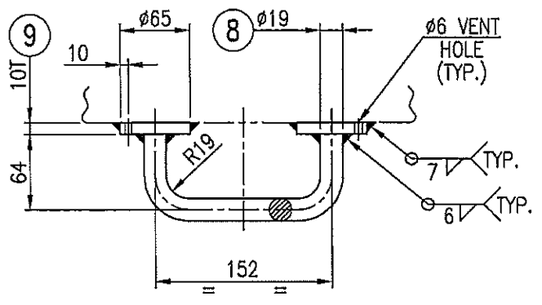

DETAIL : 'D1'




DETAIL : 'D2'




DETAIL-H1




DETAIL-H

NOTES :

1. FOR TRUE ORIENTATION OF DAVIT ARM REFER DRG. DA-7478-02-001. [2151-101-A-073]
2. ALL MOVABLE PARTS OF DAVIT ASSEMBLY TO BE THOROUGHLY LUBRICATED AND COATED WITH GREASE BEFORE DESPATCH.
3. DAVIT ASSEMBLY TO BE FITTED AND WELDED TO THE MANWAY AFTER THE BLIND FLANGE IS BOLTED TO THE MANWAY FLANGE.
4. ALL SHARP CORNERS TO BE ROUNDED OFF.

BILFAL HEAVY INDUSTRIES Ltd.
**AS BUILT**
CERTIFIED BY.....

QTY. GIVEN IN L.O.M. IS FOR ONE MANWAY ONLY
TOTAL QTY. REQUIRED = 2 Nos.

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP ) |
| Review Date : | ('06 FEB.)'07 |
| A : Approved without Comment; B: Approved/Reviewed R : Resubmit Incorporating comments; F: Not Subject to Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract. | |
| JGC DOC. NO. | ORIG. PURCHASE ORDER No. SERIAL REV. V – 2151-101-A – 045 – 00 |

TOTAL WT. = 108.30 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 1 | HANDLE ø19 | 289 | 0 | 0.0 | 0.6 | 0.6 | SA516GR70N | 7478A01L17 | 747800-001 | MACHINED FROM 22 THK. PLATE |
| | 9 | 2 | PAD ø65 | 0 | 0 | 10.0 | 0.3 | 0.6 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 8 | 1 | HANDLE ø19 | 256 | 0 | 0.0 | 0.6 | 0.6 | SA36 | 7478A19P02 | 747800-019 | |
| | 7 | 1 | LOCKNUT 2" 8UN | 0 | 0 | 0.0 | 1.3 | 1.3 | SA194GR2H | 7478A15B06 | 747800-015 | |
| | 6 | 1 | NT 2" 8UN | 0 | 0 | 0.0 | 1.3 | 1.3 | SA194GR2H | 7478A15B06 | 747800-015 | |
| | 5 | 1 | W 95.25/54/8T | 0 | 0 | 0.0 | 0.3 | 0.3 | CS | 7478A03L02 | 747800-003 | |
| | 4 | 1 | ST 2" 8UN | 200 | 0 | 0.0 | 3.2 | 3.2 | SA193GRB7 | 7478A15B06 | 747800-015 | |
| | 3 | 1 | SLEEVE O.D 154/I.D 88 | 85 | 0 | 0.0 | 8.4 | 8.4 | SA36 | 7456A05L10R001 | STOCK | MACHINED FROM 102 THK. PLATE |
| | 2A | 1 | HINGE TAB | 244 | 170 | 55.0 | 18.0 | 18.0 | SA516GR70N | 7478A03L23 ** | 747800-003 | SEE DETAIL |
| | 2 | 1 | HINGE TAB | 244 | 170 | 55.0 | 18.0 | 18.0 | SA516GR70N | 7478A03L23 ** | 747800-003 | SEE DETAIL |
| | 1 | 1 | DAVIT BAR ø85 | 1256 | 0 | 0.0 | 56.0 | 56.0 | SA36 | 7478A19P06 | 747800-019 | SEE DETAIL |

LIST OF MATERIAL ** USE CUTOUT OF MANWAY

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | `AS BUILT' | KRIT | JAP | SP |
| 2 | 27.10.'05 | REVISED AS MARKED 2 & ISSUED FOR FINAL APPROVAL | KRIT | JAP | SP |
| 1 | 12.06.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED 1 & ISSUED FOR **CONSTRUCTION** | KALYAN | JAP/SP | VINCENT |
| 0 | 15.03.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Raju | JAP/BPP | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

SCALE: 1 : 15
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY.....VINCENT
DATE.12.06.'05

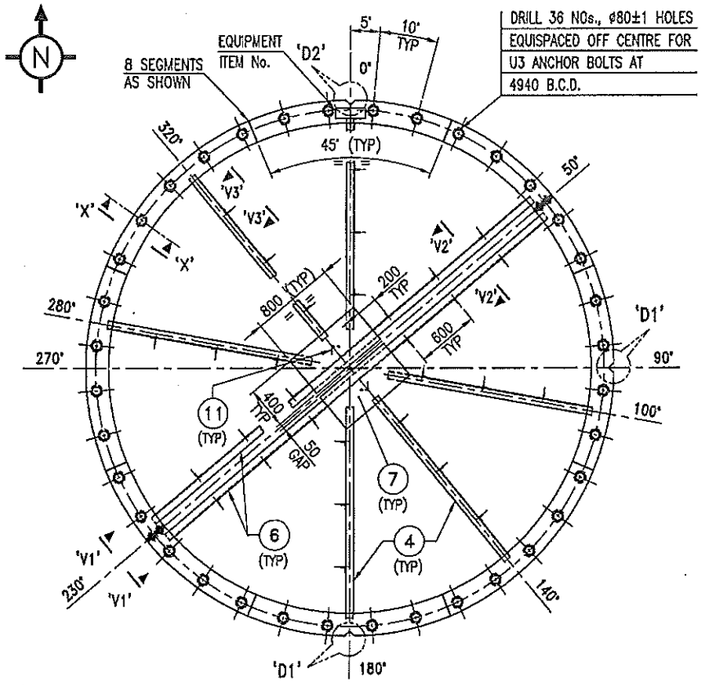
BILFAL HEAVY INDUSTRIES Ltd. شركة بلفال للصناعات الثقيلة المحدودة
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
MANWAY DAVIT 30"-300#

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقاً من شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

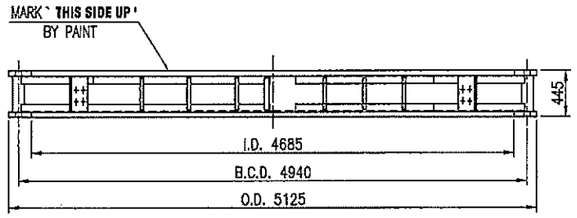
DRAWING NO. DA-7478-02-019 REV. 3

FILE NAME : DA7478020193

17-FEB-2006 AS BUILT

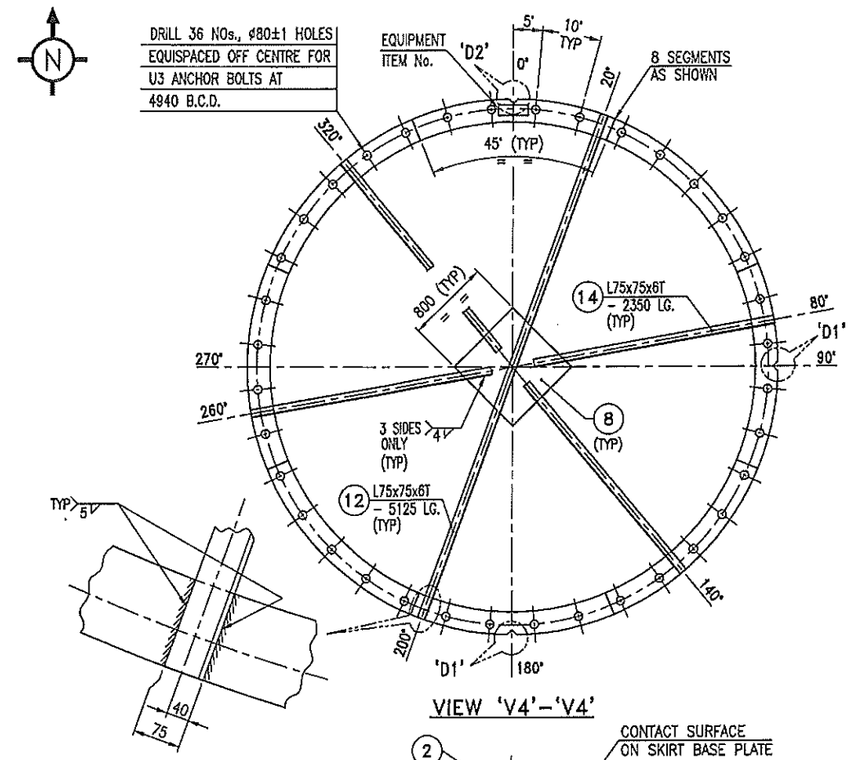



PLAN

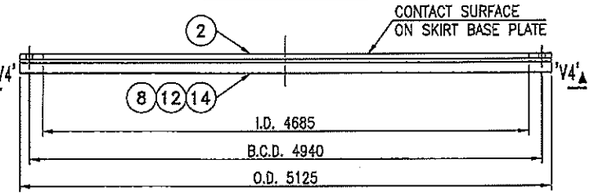



ELEVATION

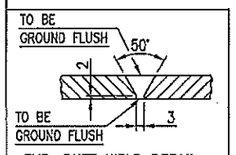
ASSEMBLY OF JIG TEMPLATE AFTER DRILLING



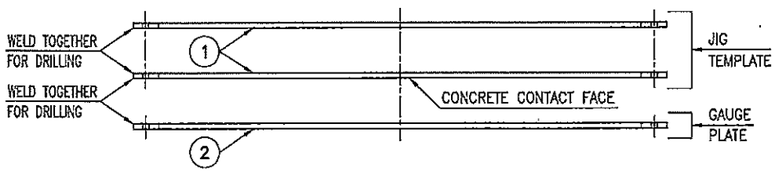

VIEW 'V4'–'V4'



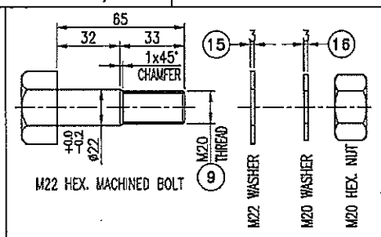

GAUGE PLATE



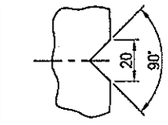

TYP. BUTT WELD DETAIL (FOR 15 THK PLATE)




ASSEMBLY FOR DRILLING

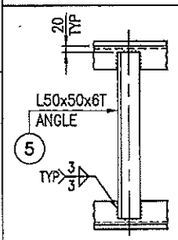



REAMER BOLT DETAIL

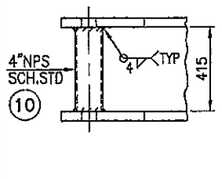



DETAIL–'D1' (SEE NOTE–6)

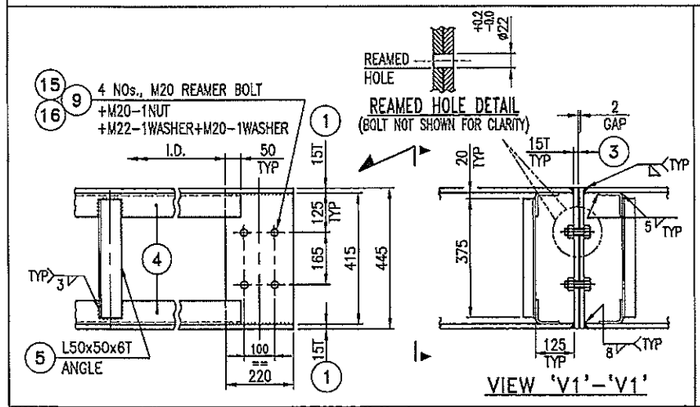
DETAIL–'D2' (SEE NOTE–6)



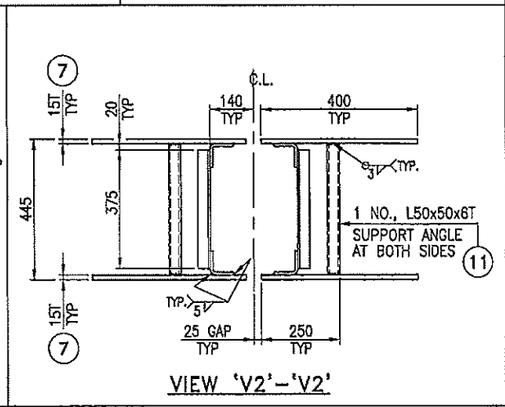

VIEW 'V3'–'V3'



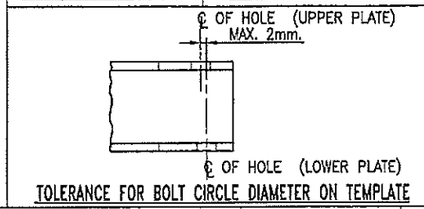

SECTION 'X'–'X'




VIEW 'V1'–'V1'




VIEW 'V2'–'V2'




TOLERANCE FOR BOLT CIRCLE DIAMETER ON TEMPLATE

NOTES :–

1. ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE SPECIFIED.
2. FOR GENERAL ASSEMBLY REFER DWG. No. DA–7478–02–001.
3. FOLLOWING TOLERANCE SHALL BE MAINTAINED.
   - (i) BOLT CIRCLE DIAMETER : ±4 mm
   - (ii) BOLT HOLE PITCH : ±3 mm
   - (iii) BOLT HOLE DIAMETER : ±1 mm
   - (iv) ORIENTATION NOTCHES : ±1.5 mm
   - (v) HEIGHT OF JIG PLATE : ±4 mm
4. ALL BOLT HOLE SHALL STRADDLE VESSEL CENTER LINES.
5. EQPT. No., & ORIENTATIONS SHALL BE PUNCHED & ENCLOSED WITH RECTANGULAR BOX BY WHITE PAINT ON THE TOP SURFACE OF THE TEMPLATE AND GAUGE PLATE.
6. NOTCH TO BE PROVIDED AT 0°, 90° & 180° ORIENTATIONS.
7. BOLT HOLES IN JIG TEMPLATE TO BE DRILLED ALONG WITH GAUGE PLATE.
8. JIG TEMPLATE TO BE DISPATCHED TO SITE IN TWO PIECES.
9. ALL WELDS TO BE 6 CFW UNLESS OTHERWISE SPECIFIED.
10. SUITABLE CARE SHALL BE TAKEN DURING HANDLING AND TRANSPORTATION OF THE TEMPLATE TO SITE.
11. DEPENDING ON THE STOCK AVAILIBILITY NEAREST EQUIVALENT SIZE MAY BE USED.
12. JIG PLATE SHALL BE COATED WITH ONE COAT OF PRIMER FOR RUST PREVENTION.

* SA307 Gr.B / SA563 Gr.A

TOTAL WT. = 2168.7 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 16 | 8 | WASHER FOR M20 | 0 | 0 | 0.0 | 0.0 | 0.0 | CS | 7478A13B01 | 747800–013 | |
| | 15 | 8 | WASHER FOR M22 | 0 | 0 | 0.0 | 0.0 | 0.0 | CS | 7478A13B01 | 747800–013 | |
| | 14 | 4 | L 75x75x6 THK | 2350 | 0 | 0.0 | 16.1 | 64.4 | SA36 | 7478A12P01 | 747800–012 | |
| | 13 | | | | | | | | | | | |
| | 12 | 1 | L 75x75x6 THK | 5125 | 0 | 0.0 | 35.1 | 35.1 | SA36 | 7478A12P01 | 747800–012 | |
| | 11 | 2 | L 50x50x6 THK | 415 | 0 | 0.0 | 2.9 | 5.8 | SA36 | 7446A39P03 | STOCK | |
| | 10 | 36 | PI 4" SCH STD. | 415 | 0 | 0.0 | 6.7 | 241.2 | SA106 Gr.B | 7440A18T06 | STOCK | |
| | 9 | 8 | REAMER BT+1 NT M20 | 65 | 0 | 0.0 | 0.0 | 0.0 | * | 7478A13B01 | 747800–013 | |
| | 8 | 1 | GAUGE SUPPORT PLATE | 800 | 800 | 15.0 | 75.4 | 75.4 | SA36 | 7457A08L01 | STOCK | |
| | 7 | 4 | TOP/BOTTOM PLATE | 800 | 400 | 15.0 | 37.7 | 150.8 | SA36 | 7457A08L01 | STOCK | |
| | 6 | 4 | L 75x75x6 THK | 4785 | 0 | 0.0 | 32.8 | 131.2 | SA36 | 7478A12P01 | 747800–012 | |
| | 5 | 30 | L 50x50x6 THK | 375 | 0 | 0.0 | 1.8 | 54.0 | SA36 | 7446A39P03 | STOCK | |
| | 4 | 12 | L 75x75x6 THK | 2020 | 0 | 0.0 | 13.9 | 166.8 | SA36 | 7478A12P01 | 747800–012 | |
| | 3 | 4 | END PLATE | 445 | 220 | 15.0 | 11.6 | 46.4 | SA36 | 7457A08L01 | STOCK | |
| | 2 | 1 | GAUGE PLT 005125/ID4685 | 0 | 0 | 15.0 | 399.2 | 399.2 | SA36 | 7462A11L03A | STOCK | IN SEGMENTS |
| | 1 | 2 | JIG PLT OD5125/ID4685 | 0 | 0 | 15.0 | 399.2 | 798.4 | SA36 | 7457A08L01 | STOCK | IN SEGMENTS |

## LIST OF MATERIAL

| | |
|---|---|
| JCP Project (JOB No. : 0–3515–20) | |
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | ( EQP ) 7/1 |
| Review Date : | (06 FEB. 17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to
Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151–101–A – 046 | – 00 | |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 4 | 19.12.'05 | `AS BUILT' | KIRIT | | |
| 3 | 02.07.'05 | REVISED AS MARKED 3 | KALYAN | JAP/SP | VINCENT |
| 2 | 26.01.'05 | REVISED AS PER CUENT COMMENTS AS MARKED 2 & ISSUED FOR **CONSTRUCTION** | RAJU | JAP/BIBHU | VINCENT |
| 1 | 11.01.'05 | REVISED AS PER CUENT COMMENTS AS MARKED 1 & ISSUED FOR APPROVAL | RAJU | JAP/BIBHU | VINCENT |
| 0 | 30.10.04 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | PRASAD | VENKATESW ARAN | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيليلي السعودية للصناعات الثقيلة المحدودة

| | |
|---|---|
| SCALE: | 1:40 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0–3515–P–2151–101–A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT..... |
| DATE.... | 26.01.'05. |

BILFAL HEAVY INDUSTRIES Ltd. AL– JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R–3201)
JIG & GAUGE PLATE

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BELLELI SAUDI HEAVY IND. LTD.

| DRAWING NO. | REV. |
|---|---|
| TP–7478–02–001 | 4 |

17-FEB-2005 07:47:58 AS BUILT

BILFAL HEAVY INDUSTRIES Ltd. شركة بلفل للصناعات الثقيلة

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

TOTAL SHEETS : 3

| | | |
|---|---|---|
| VENDOR'S NAME | : | BILFAL HEAVY INDUSTRIES LIMITED |
| COMPANY'S NAME | : | JUBAIL CHEVRON PHILLIPS COMPANY |
| PURCHASER'S NAME | : | JGC CORPORATION |
| PLANT LOCATION | : | AL JUBAIL, SAUDI ARABIA |
| PROJECT NAME | : | JCP PROJECT |
| EQUIPMENT NAME | : | ALKYLATOR |
| ITEM/TAG NUMBER | : | R-3201 |
| VENDOR'S DOC. NO | : | ST-7478-02-001 |
| DOCUMENT TITLE | : | FINISH REQUIREMENT |

| JCP Project (JOB No. : 0-3515--20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( - ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | ( EQP ) |
| Review Date : | '06 MAR. 1 |

A : Approved without Comment, B: Approved/Reviewed
R : Resubmit incorporating comments, F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | | SERIAL | REV. |
|---|---|---|---|---|---|
| | V - | 2151 - | 101 - A - | 048 - | 00 |

BILFAL HEAVY IND. LTD. AS BUILT
CERTIFIED BY:

INDRA 01-MAR-2006 AS BUILT

| BILFAL | CLIENT : JGC | REV | DRAWING NO. |
|---|---|---|---|
| HEAVY INDUSTRIES LTD | ITEM : Alkylator ( R-3201 ) | 0 | ST-7478-02-001 |
| JUBAIL | BSHI JOB : 7478-02 | 1 | |
| FORMERLY : BELLELI SAUDI | FINISH REQUIREMENTS | 2 | |
| | | 3 | |
| | | 4 | |

| EXTERNAL SURFACES | | INTERNAL SURFACES | |
|---|---|---|---|
| DESCRIPTION OF THE PART | TYPE OF FINISH REQUIRED | DESCRIPTION OF THE PART | TYPE OF FINISH REQUIRED |
| INSULATED SURFACES: SHELL, HEAD & NOZZLES | A, E, F | SHELL, HEAD & NOZZLES | A, D, J |
| MANWAY DAVIT, LIFTING TRUNION AND ALL EXTERNAL ATTACHEMENTS PROTRUDING THROUGH INSULATION | A, B, G | INTERNAL ATTACHEMENTS | A, D, J |
| SKIRT SUPPORT & BASE BLOCK | A, B, H | SKIRT SUPPORT & BASE BLOCK | A, C, I |
| NOZZLE GASKET FACES | K | | |
| LETTERING & MARKING | L | | |

## FINISH DESCRIPTION

| | | | |
|---|---|---|---|
| A | CLEANING AND/OR DRYING | : | REMOVE ALL DIRT, DEBRIS, OIL AND GREASE, WELD SPATTERS & SLAG CONTAMINATION. |
| B | EXTERNAL BLAST CLEANING | : | SSPC-SP 10 NEAR WHITE BLAST CLEANING (SA 2-1/2) WITH A PROFILE OF 2-4 MILS. |
| C | EXTERNAL BLAST CLEANING | : | SSPC-SP 10 NEAR WHITE BLAST CLEANING (SA 2-1/2) WITH A PROFILE OF 1.5-2.5 MILS. |
| D | INTERNAL BLAST CLEANING | : | SSPC-SP 10 NEAR WHITE BLAST CLEANING (SA 2-1/2) WITH A PROFILE OF 2-4 MILS. |
| E | EXTERNAL BLAST CLEANING | : | SSPC-SP6 COMMERCIAL BLAST CLEANING (SA 2). |

| | | | | NO OF COATS | TOTAL DFT (MILS) | SURFACE AREA PER EQPT (SQ.M) | PAINT QTY REQ PER EQPT. (LTR) | MATL CODE |
|---|---|---|---|---|---|---|---|---|
| F | EXTERNAL PAINT | : | PAINT SYSTEM (NO. 2.1 OF TABLE - 1 SPEC : JGP-00-NO-GS-001) | 1 (MIN.) | 2.0 MILS | | | |
| | COAT 1 | : | ALKYD PAINT PRODUCT NAME: HEMPEL'S ZP ALKYD PRIMER 12030 (COLOR : YELLOW) | 1 | 2.0 MILS (MIN) | 840.0 | | |
| | COAT 2 | : | ... | | | | | |
| | COAT 3 | : | ... | | | | | |
| G | EXTERNAL PAINT | : | PAINT SYSTEM (NOTE 3 OF TABLE - 1 SPEC : JGP-00-NO-GS-001) | NO OF COATS 3 (MIN.) | TOTAL DFT (MILS) 11.5 - 16.5 (MIN.-MAX.) | SURFACE AREA PER EQPT (SQ.M) | PAINT QTY REQ PER EQPT. (LTR) | MATL CODE |
| | COAT 1 | : | EPOXY PHENOLIC / AMINE ADDUCT (P-2) PRODUCT NAME: HEMPADUR 1540 | 1 | 5.0 - 7.0 | 40.0 | | |
| | COAT 2 | : | EPOXY PHENOLIC / AMINE ADDUCT (P-3) PRODUCT NAME: HEMPADUR 1540 (Refer Note-9) | 1 | 5.0 - 7.0 | 40.0 | | |
| | COAT 3 (Top Coat) | : | ALIPHATIC POLYURETHANE (P-9) PRODUCT NAME: HEMPATHANE 55211 COLOR: FAWN (MUNSELL 2.5Y 7/4 OR RAL 1002) | 1 | 1.5 - 2.5 | 40.0 | | |
| H | EXTERNAL PAINT | : | PAINT SYSTEM - FIREPROOFED (NO 2.3 OF TABLE - 1 SPEC : JGP-00-NO-GS-001) | NO OF COATS 2 (MIN.) | TOTAL DFT (MILS) 10 - 14 (MIN.-MAX.) | SURFACE AREA PER EQPT (SQ.M) | PAINT QTY REQ PER EQPT. (LTR) | MATL CODE |
| | COAT 1 | : | EPOXY PHENOLIC / AMINE ADDUCT (P-3) PRODUCT NAME: HEMPADUR 1540 COLOR: LIGHT GREEN | 1 | 5.0 - 7.0 | 178 | | |
| | COAT 2 (Top Coat) | : | EPOXY PHENOLIC / AMINE ADDUCT (P-3) PRODUCT NAME: HEMPADUR 1540 COLOR: LIGHT RED | 1 | 5.0 - 7.0 | 178 | | |
| | COAT 3 | : | ... | | | | | |
| I | EXTERNAL PAINT | : | PAINT SYSTEM - UNFIREPROOFED (NO 3.2 OF TABLE - 1 SPEC : JGP-00-NO-GS-001) | NO OF COATS 3 (MIN.) | TOTAL DFT (MILS) 7.5 - 12.5 (MIN.-MAX.) | SURFACE AREA PER EQPT (SQ.M) | PAINT QTY REQ PER EQPT. (LTR) | MATL CODE |
| | COAT 1 | : | INORGANIC ZINC (P-1) PRODUCT NAME: GALVOSIL 1570 | 1 | 2.0 - 4.0 | 155 | | |
| | COAT 2 | : | H.B EPOXY POLYAMIDE (P-4) PRODUCT NAME: HEMPADUR HB 4520 | 1 | 4.0 - 6.0 | 155 | | |
| | COAT 3 (Top Coat) | : | ALIPHATIC POLYURETHANE (P-9) PRODUCT NAME: Hempathane 55211 COLOR: FAWN (MUNSELL 2.5Y 7/4 OR RAL 1002) | 1 | 1.5 - 2.5 | 155 | | |

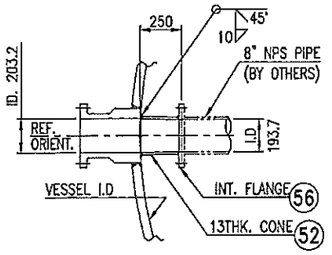
INDRA 01-MAR-2006 AS BUILT

| | | | |
|---|---|---|---|
| J | INTNL. PROTECTION | : | BEFORE SHIPMENT, INTERIOR SURFACES SHALL BE NITROGEN BLANKETED. |
| K | GREASING | : | GASKET FACES OF FLANGES TO BE COATED WITH A LUBRICATING STIFF GREASE. |
| L | LETTERING | : | USE COMPATIBLE PAINT, WHITE COLOUR FOR MARKING & LETTERING. |
| | NOTES | : | 1) OPERATING TEMP (°C) : 197 / 221 (TOP) & 203 / 365 (BOTTOM)<br>2) VESSEL IS INSULATED.<br>3) APPLICABLE PAINTING SPECS:<br>• JCP-00-N0-GS-001, REV. C03 = PROJECT SPECIFICATION FOR PAINTING AND GALVANIZING<br>• JCP-00-N1-GS-1001, REV. C01 = PROJECT SPECIFICATION FOR RUST PREVENTION<br>4) CLOSE ALL NOZZLE OPENINGS WITH 3 MM THK. STEEL COVERS & NEOPRENE GASKETS WITH MIN. 4 RUST RESISTANT BOLTS.<br>5) PAINT USED FOR SUCCESSIVE COATS SHALL BE OF CONTRASTING COLOUR AND FROM THE SAME MANUFACTURER.<br>6) ACCEPTABLE PAINT MANUFACTURE AND PAINT MATERIAL CHOICE BE AS PER ATTACHMENT A-2 OF JCP-00-N0-GS-001.<br>7) VESSEL SHALL BE NITROGEN FILLED BEFORE DESPATCH.<br>8) INTERNAL SURFACE AREA : 785 Sq. meter.<br>9) NECESSITY OF HAND SANDING WILL DEPEND ON TIME INTERVAL BETWEEN PRIMER AND P2 SYSTEM BASED ON PAINTING MANUFACTURER'S INSTRUCTION. IF P-2 IS COATED AFTERWARD, HAND SANDING SHALL BE PERFORMED. |

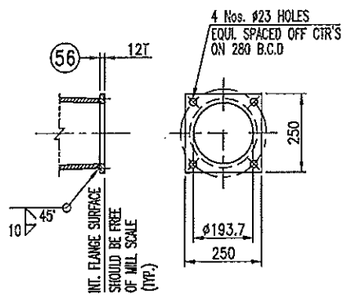
| APPROVED FOR CONSTRUCTION | PURCHASE ORDER NO. |
|---|---|
| | 0-3515-P-2151-101-A |
| BY : VINCENT DATE : 24-JULY-2006 | |

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 4 | 23-FEB-06 | AS BUILT | Jawahar 35 | V. Vincent | V. Vincent |
| 3 | 15-DEC-05 | ISSUED FOR STATUS CHANGE | SHANMUGAM | PALANIVEL | SUDHIR |
| 2 | 27-OCT-05 | REVISED AS PER CLIENT COMMENTS | SHANMUGAM | PALANIVEL | SUDHIR |
| 1 | 24-JULY-05 | ISSUED FOR CONSTRUCTION | SHANMUGAM | PALANIVEL | SUDHIR |
| 0 | 28-May-05 | ISSUED FOR APPROVAL | SUDHIR | PALANIVEL | VINCENT |

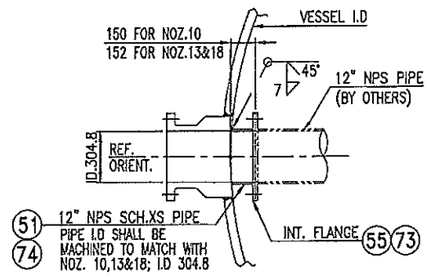
INDRA
01-MAR-2006
AS BUILT



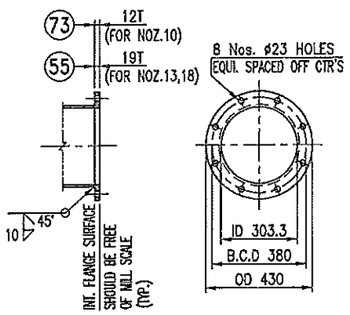

DETAIL OF NOZZLES - 11A/B
(8" - #300)



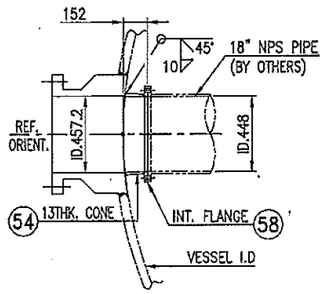

DETAIL OF INTERNAL FLANGE



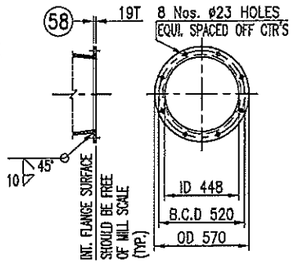

DETAIL OF NOZZLES - 10, 13 & 18
(12" - #300)



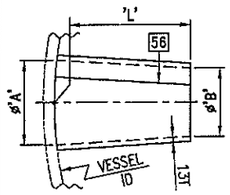

DETAIL OF INTERNAL FLANGE




DETAIL OF NOZZLE - 20
(18" - #300)



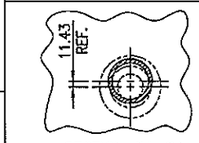

DETAIL OF INTERNAL FLANGE




| NOZZLE MARK | A | B | L | POS. NO. |
|---|---|---|---|---|
| 11A/B | 203.2 | 193.7 | 238 | 52 |
| | | | | |
| 20 | 457.2 | 448 | 133 | 54 |

TYP. CONE DETAIL

# - TO BE MACHINED FROM 25 Thk. PLATE
@ - TO BE MACHINED FROM 16 Thk. PLATE





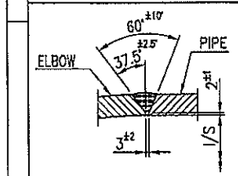


DETAIL OF NOZZLES FOR 32A ~ 32H

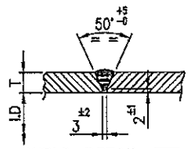
NOTE: INSIDE LOW POINT OF
2" SAMPLE NOZZLE (32 A~I)
IS TO BE ALIGNED WITH
INSIDE LOW POINT OF 3" ELBOW.




DETAIL OF NOZZLE FOR 32I




WELD DETAIL [43]




WELD DETAIL [56]

TOTAL WT. = 8741.1 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 74 | 1 | PI 12"-XS | 138 | 0 | 0.0 | 13.5 | 13.5 | SA106GRB | 7478A07T07 | 747800-007 | 10 (W/C XS) |
| | 73 | 1 | INT. FLANGE (SEE DET.) | 0 | 0 | 12(θ) | 6.8 | 6.8 | SA516GR70N | 7478A03L29 | 747800-003 | 10 |
| | 72 | 4 | PI 6"-40 | 177 | 0 | 0.0 | 5.0 | 20.0 | SA106GRB | 7478A07T05 | 747800-007 | SV1~SV4 |
| | 71 | | DELETED | | | | | | | | | |
| | 70 | | DELETED | | | | | | | | | |
| | 69 | | DELETED | | | | | | | | | |
| | 68 | 9 | E 3"-80 SR90 | 0 | 0 | 0.0 | 1.9 | 17.1 | SA234GRWPB | 7478A08C01 | 747800-008 | 32A~32I |
| | 67 | 9 | PI 3"-80 | 74 | 0 | 0.0 | 1.2 | 10.8 | SA106GRB | 7478A07T03 | 747800-007 | 32A~32I |
| | 66 | | DELETED | | | | | | | | | |
| | 65 | | DELETED | | | | | | | | | |
| | 64 | | DELETED | | | | | | | | | |
| | 63 | | DELETED | | | | | | | | | |
| | 62 | | DELETED | | | | | | | | | |
| | 61 | | DELETED | | | | | | | | | |
| | 60 | | DELETED | | | | | | | | | |
| | 59 | | DELETED | | | | | | | | | |
| | 58 | 1 | INT. FLANGE (SEE DET.) | 0 | 0 | 19(f) | 16.3 | 16.3 | SA516GR70N | 7478A03L07 | 747800-003 | 20 |
| | 57 | | DELETED | | | | | | | | | |
| | 56 | 2 | INT. FLANGE (SEE DET.) | 250 | 250 | 12(θ) | 5.9 | 11.8 | SA516GR70N | 7478A03L29 | 747800-003 | 11A,11B |
| | 55 | 2 | INT. FLANGE (SEE DET.) | 0 | 0 | 19(f) | 10.8 | 21.6 | SA516GR70N | 7478A03L07 | 747800-003 | 13,18 |
| | 54 | 1 | CC (SEE DET.) | 0 | 0 | 13.0 | 19.7 | 19.7 | SA516GR70N | 7478A03L05 | 747800-003 | 20 |
| | 53 | | DELETED | | | | | | | | | |
| | 52 | 2 | CC (SEE DET.) | 0 | 0 | 13.0 | 16.2 | 32.4 | SA516GR70N | 7478A03L05 | 747800-003 | 11A,11B |
| | 51 | 2 | PI 12"-XS | 133 | 0 | 0.0 | 13.0 | 26.0 | SA106GRB | 7478A07T07 | 747800-007 | 13,19 (W/C XS) |
| | 50 | 2 | FLAT BAR | 154 | 40 | 10.0 | 0.5 | 1.0 | SA516GR70N | 7478A03L03 | 747800-003 | OS-6,OS-7 |
| | 49 | 2 | FLAT BAR | 464 | 40 | 10.0 | 1.5 | 3.0 | SA516GR70N | 7478A03L03 | 747800-003 | OS-5,OS-8 |
| | 48 | 2 | FLAT BAR | 1027 | 40 | 10.0 | 3.3 | 6.6 | SA516GR70N | 7478A03L03 | 747800-003 | OS-2,OS-3 |
| | 47 | 2 | FLAT BAR | 822 | 40 | 10.0 | 2.6 | 5.2 | SA516GR70N | 7478A03L03 | 747800-003 | OS-1,OS-4 |
| | 46 | 2 | FAB. ANGLE (SEE DETAIL) | 150 | 0 | 10.0 | 1.0 | 2.0 | SA516GR70N | 7478A03L03 | 747800-003 | OS-6,OS-7 |
| | 45 | 2 | FAB. ANGLE (SEE DETAIL) | 442 | 0 | 10.0 | 3.0 | 6.0 | SA516GR70N | 7478A03L03 | 747800-003 | OS-5,OS-8 |
| | 44 | 2 | FAB. ANGLE (SEE DETAIL) | 988 | 0 | 10.0 | 6.6 | 13.2 | SA516GR70N | 7478A03L03 | 747800-003 | OS-2,OS-3 |
| | 43 | 2 | FAB. ANGLE (SEE DETAIL) | 788 | 0 | 10.0 | 5.3 | 10.6 | SA516GR70N | 7478A03L03 | 747800-003 | OS-1,OS-4 |
| | 42 | 2 | FLAT BAR | 723 | 40 | 10.0 | 2.3 | 4.6 | SA516GR70N | 7478A03L03 | 747800-003 | IS-3,IS-4 |
| | 41 | 2 | FLAT BAR | 987 | 40 | 10.0 | 3.1 | 6.6 | SA516GR70N | 7478A03L03 | 747800-003 | IS-1,IS-2 |
| | 40 | 1 | HANDLE ø13 | 285 | 0 | 0.0 | 0.5 | 0.5 | SA36 | 7440A41P01 | STOCK | |
| | 39 | 5 | B+NT M20 | 50 | 0 | 0.0 | 0.3 | 1.2 | SS304 | 7478A17B09 | 747800-017 | 4+1 SPARE |
| | 38 | 1 | COVER PL. ø760 | 0 | 0 | 6.0 | 21.4 | 21.4 | SA516GR70N | 7478A03L01 | 747800-003 | |
| | 37 | 1 | BOTTOM PL. ø1830 | 0 | 0 | 16.0 | 330.1 | 330.1 | SA516GR70N | 7478A03L29 | 747800-003 | |
| | 36 | 4 | FLAT BAR | 101 | 40 | 10.0 | 0.4 | 1.6 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 35 | 4 | FAB. ANGLE (SEE DETAIL) | 50 | 0 | 10.0 | 0.4 | 1.6 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 34 | 5 | B+NT M20 | 45 | 0 | 0.0 | 0.3 | 1.2 | SS304 | 7478A17B08 | 747800-017 | 4+1 SPARE |
| | 33 | 1 | COVER PL. ø423 | 0 | 0 | 6.0 | 6.7 | 6.7 | SA516GR70N | 7478A03L01 | 747800-003 | |
| | 32 | 1 | BOTTOM PL. ø819 | 0 | 0 | 10.0 | 41.4 | 41.4 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 31 | 1 | ASME NAME PLATE | 200 | 130 | 3.0 | 0.6 | 0.6 | SS304 | 7440A69L04 | STOCK | |
| | 30 | 1 | CLIENT NAME PLATE | 200 | 140 | 3.0 | 0.7 | 0.7 | SS304 | 7440A69L04 | STOCK | |
| | 29 | 1 | NAME PL. BRACKET | 300 | 101 | 6.0 | 1.5 | 1.5 | SA240TP304 | 7440A04L04 | STOCK | |
| | 28 | 1 | NAME PL. BRACKET | 300 | 210 | 6.0 | 3.0 | 3.0 | SA240TP304 | 7440A04L04 | STOCK | |
| | 27 | 1 | RP 1100/660/25T | 0 | 0 | 0.0 | 119.4 | 119.4 | SA516GR70N | 7478A01L23 | 747800-001 | AH |
| | 26 | 1 | FAB. PIPE | 1964 | 152 | 25.0 | 58.6 | 58.6 | SA516GR70N | 7478A01L23 | 747800-001 | AH |
| | 25 | 1 | RP 914/467/25T | 0 | 0 | 0.0 | 95.5 | 95.5 | SA516GR70N | 7478A01L23 | 747800-001 | P02 |
| | 24 | 1 | PI 18"-40 | 152 | 0 | 0.0 | 23.7 | 23.7 | SA106GRB | 7187A14T16R001 | STOCK | P02 |
| | 23 | 1 | RP 1680/850/25T | 0 | 0 | 0.0 | 323.7 | 323.7 | SA516GR70N | 7478A01L23 | 747800-001 | P01 |
| | 22 | 1 | FAB. PIPE | 2561 | 165 | 25.0 | 83.0 | 83.0 | SA516GR70N | 7478A01L23 | 747800-001 | P01 |
| | 21 | 58 | LADDER RUNG PAD ø80 | 0 | 0 | 12.0 | 0.5 | 29.0 | SA516GR70N | 7478A01L04 | 747800-001 | |
| | 20 | 29 | LADDER RUNG ø25 ROD | 862 | 0 | 0.0 | 3.4 | 98.6 | SA36 | 7478A19P03 | 747800-019 | |
| | 19 | 1 | RP 915/467/25T | 0 | 0 | 0.0 | 95.5 | 95.5 | SA516GR70N | 7478A01L23 | 747800-001 | 19 |
| | 18 | 1 | CC 457.2/431.2/30GHT | 0 | 0 | 13.0 | 41.6 | 41.6 | SA516GR70N | 7478A03L05 | 747800-003 | 19 |
| | 17 | 1 | FAB. PIPE | 1398 | 1364 | 13.0 | 194.3 | 194.3 | SA516GR70N | 7478A03L05 | 747800-003 | 19 |
| | 16 | 1 | E 18"-XS LR90 | 0 | 0 | 0.0 | 150.0 | 150.0 | SA234GRWPB | 7478A08C04 | 747800-008 | 19 |
| | 15 | 1 | FAB. PIPE | 1396 | 259 | 13.0 | 36.9 | 36.9 | SA516GR70N | 7478A03L05 | 747800-003 | 19 |
| | 14 | | DELETED | | | | | | | | | |
| | 13 | 1 | F 10" 300# WNRF-80 | 0 | 0 | 0.0 | 40.9 | 40.9 | SA350 GRLF2 CL2 | 7478A05F06 | 747800-005 | 17 |
| | 12 | 1 | PI 10"-80 | 2142 | 0 | 0.0 | 205.7 | 205.7 | SA106GRB | 7478A07T06 | 747800-007 | 17 |
| | 11 | 1 | E 10"-80 LR90 | 0 | 0 | 0.0 | 57.5 | 57.5 | SA234GRWPB | 7478A08C02 | 747800-008 | 17 |
| | 10 | 1 | PI 10"-80 | 90 | 0 | 0.0 | 8.7 | 8.7 | SA106GRB | 7478A07T06 | 747800-007 | 17 |
| | 9 | | DELETED | | | | | | | | | |
| | 8 | 1 | E 24"- LR90 - 20T | 0 | 0 | 0.0 | 418.0 | 418.0 | SA234GRWPB | 7478A08C07 | 747800-008 | 14 |
| | 7 | 1 | FAB. PIPE | 1852 | 658 | 20.0 | 191.5 | 191.5 | SA516GR70N | 7478A03L30 | 747800-003 | 14 |
| | 6 | 1 | F 24" 300# WNRF-20T | 0 | 0 | 0.0 | 245.0 | 245.0 | SA350 GRLF2 CL2 | 7478A05F07 | 747800-005 | 14 |
| | 5 | 2 | EARTH LUG | 127 | 64 | 6.0 | 0.4 | 0.8 | SS304 | 7440A04L04 | STOCK | |
| | 4 | 72 | GUSSET PLATE | 256 | 177.5 | 25.0 | 9.0 | 648.0 | SA516GR70N | 7478A01L23 | 747800-001 | |
| | 3 | 36 | PLATE WASHER | 191 | 152 | 65.0 | 14.9 | 536.4 | SA516GR70N | 7440A43L06 | STOCK | |
| | 2 | 1 | COMP. RING 5125/4753 | 0 | 0 | 45.0 | 1020.3 | 1020.3 | SA516GR70N | 7478A01L43 | 747800-001 | IN 4SEGMENTS |
| | 1 | 1 | BASE RING 5125/4413 | 0 | 0 | 80.0 | 3352.2 | 3352.2 | SA516GR70N | 7478A03L28 | 747800-003 | IN 4SEGMENTS |

LIST OF MATERIAL

| | |
|---|---|
| JCP Project (JOB No. : 0-3515-20) | |
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) T.K |
| Review Date : | ('06 FEB. 17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | – 2151-101-A – 066 – | 00 | |

BILFAL HEAVY INDUSTRIES Ltd.
**AS BUILT**
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 6 | 19.12.'05 | **'AS BUILT'** | KIRIT | HUSAIN | SP |
| 5 | 27.10.'05 | REVISED AS MARKED (5) & ISSUED FOR FINAL APPROVAL | KIRIT | JAP | SP |
| 4 | 10.08.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED (4) | KIRIT | JAP/SP | VINCENT |
| 3 | 06.06.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED (3) & ISSUED FOR **CONSTRUCTION** | RAJU | JAP/SP | VINCENT |
| 2 | 06.04.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED (2) & ISSUED FOR REAPPROVAL | RAJU | JAP/BBP | VINCENT |
| 1 | 12.02.'05 | REVISED AS MARKED (1) & ISSUED FOR REAPPROVAL | Ravi | JAP/BBP | VINCENT |
| 0 | 19.01.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | RAJU | JAP/BBP | VINCENT |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD. بيـلـليـاي الـسـعـوديـة للـصـنـاعـات الـثـقـيـلـة المـحـدودة

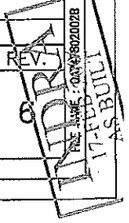
SCALE: 1 : 25
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY.....VINCENT
DATE.....06.06.'05

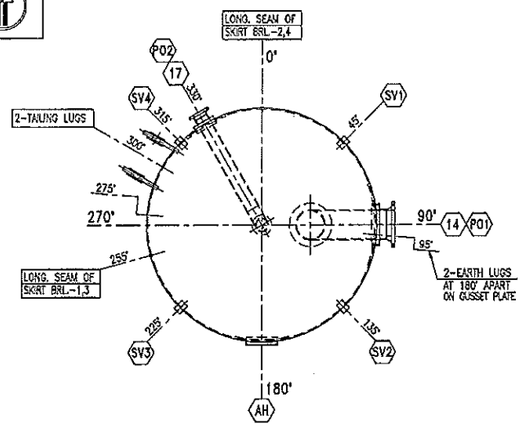
BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
DETAIL DRAWING

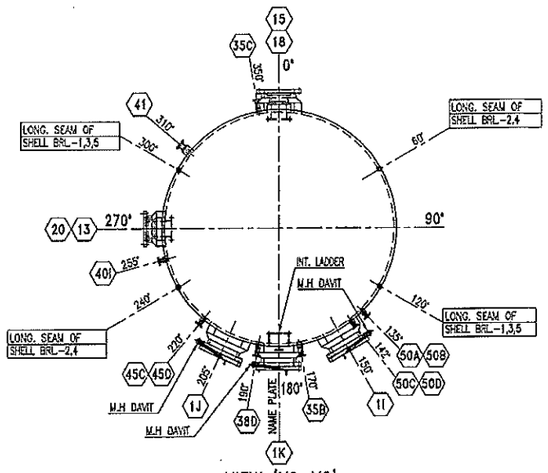
لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقاً من شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

DRAWING NO. DA-7478-02-002 REV. 6
SHEET 2 OF 2

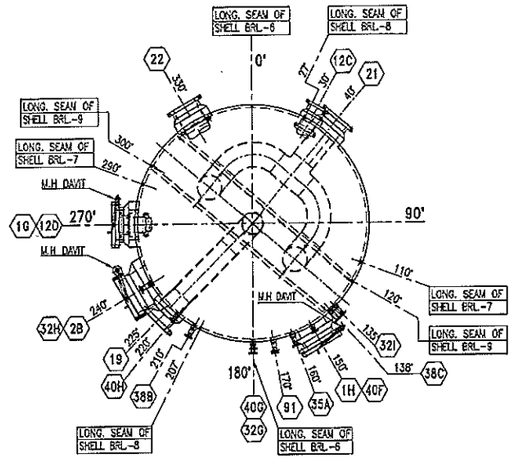




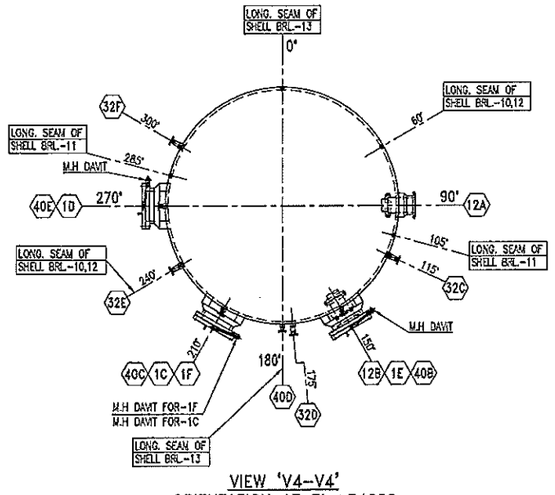

VIEW 'V1-V1'
ORIENTATION AT EL.±0.000
(SKIRT BRL. 1~4)



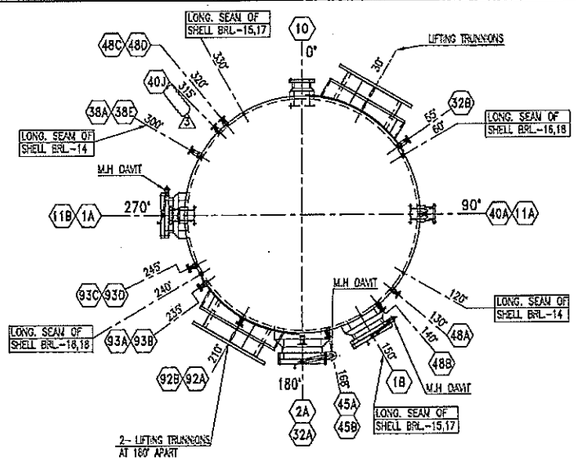

VIEW 'V2-V2'
ORIENTATION AT EL.+13820
(SHELL BRL. 1~5)



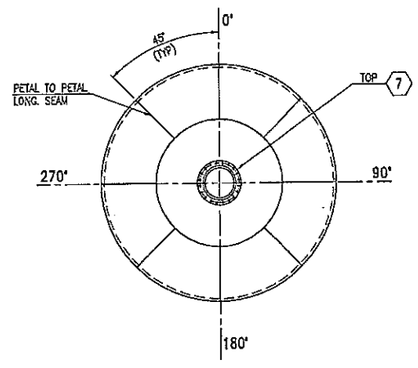

VIEW 'V3-V3'
ORIENTATION AT EL.+24420
(SHELL BRL. 6~9)



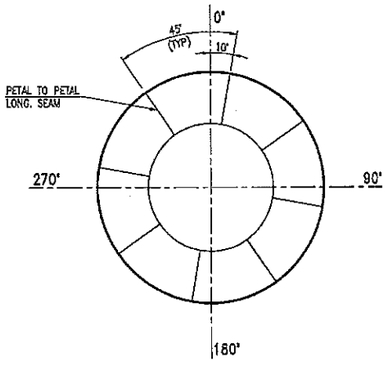

VIEW 'V4-V4'
ORIENTATION AT EL.+34620
(SHELL BRL. 10~13)



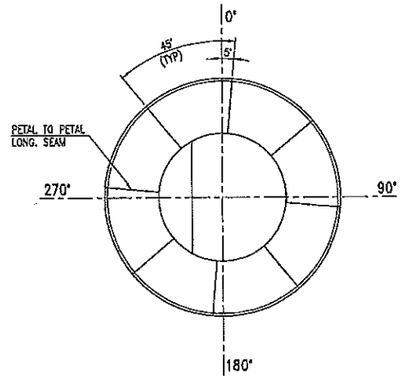

VIEW 'V5-V5'
ORIENTATION AT EL.+48628
(SHELL BRL. 14~18)




VIEW 'V6-V6'
ORIENTATION PLAN
(TOP HEAD)




ORIENTATION PLAN
(INTERMEDIATE HEAD)




ORIENTATION PLAN
(BOTTOM HEAD)

| JCP Project (JCB No. : 0-3515-20) | | | |
|---|---|---|---|
| ISSUE PURPOSE : | AB | | |
| RESULT CODE : A, B, R, F | ( A ) | | |
| NEXT STATUS : FA, FI, FR, FC | ( — ) | | |
| RESUBMISSION DATE : | ( ) | | |
| RESPONSIBLE DEPT./PERSON : | EQD/ | | |
| Review Date : | 06 FEB 17 | | |
| A : Approved without Comment; B: Approved Reviewed<br>R : Resubmit incorporating comments; F: Not Subject to | | | |
| Approval or review hereunder shall not be construed to relieve Supplier /Subcontractor of his respons bilities and liabi lity under the contract. | | | |
| JGC DOC. NO. | ORIG. PURCHASE ORDER No. | SERIAL | REV. |
| V - 2151-101-A - 073 - 00 | | | |

BILFAL HEAVY INDUSTRIES Ltd.
**AS BUILT**
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | REVISED AS MARKED ⚠ & "AS BUILT" | KIRIT | H.SAN | SP |
| 2 | 10.08.'05 | REVISED AS MARKED ⚠ | KIRIT | JAP GP | VINCENT |
| 1 | 12.05.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED ⚠ & ISSUED FOR CONSTRUCTION | RAJU | JAP GP | VINCENT |
| 0 | 11.05.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | RAJU | JAP GP | VINCENT |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليني السعودية

SCALE: 1 : 60
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY..... VINCENT
DATE..12.05.'05

BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
ORIENTATION OF NOZZLES

DRAWING NO. DA-7478-02-001 SHEET 2 OF 2 REV. 3

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقاً من شركة بفال للصناعات الثقيلة المحدودة.
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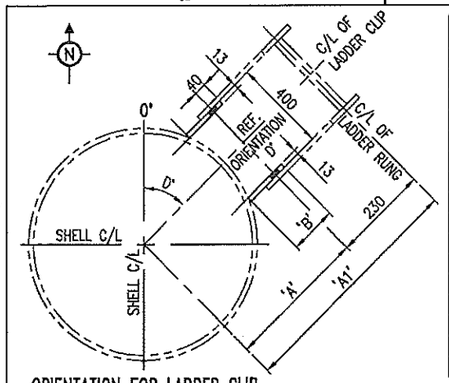
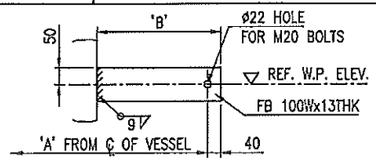


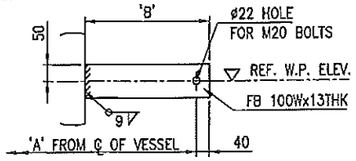

ORIENTATION FOR LADDER CLIP

| LADDER | "A1" | "A" | "D" |
|---|---|---|---|
| L1 | 2770 | 2540 | 135° |
| L2 | 2780 | 2550 | 155° |
| L3 | 2780 | 2550 | 205° |
| L4 | 2780 | 2550 | 325° |
| L5 | 2780 | 2550 | 155° |
| L6 | 2780 | 2550 | 180° |
| L7 | 2770 | 2540 | 198° |
| L8 | 2770 | 2540 | 240° |
| L9 | 2730 | 2500 | 287° |
| L10 | 2770 | 2540 | 224° |
| L11 | 2770 | 2540 | 245° |
| L12 | 2770 | 2540 | 180° |
| L13 | 2770 | 2540 | 120° |
| L14 | 2770 | 2540 | 155° |
| L15 | 2770 | 2540 | 115° |
| L16 | 2730 | 2500 | 255° |



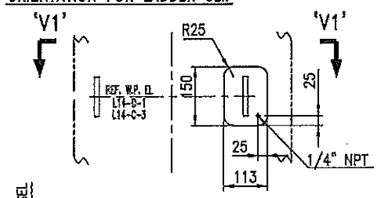

CLIP 'D' (SLIDING TYPE)

| TYPE 'D' | | | |
|---|---|---|---|
| CLIP MKD. NO. | "B" | QTY | POS NO |
| L1-D-1 & 3 | 212 | 4 | (16) |
| L2-D-1 & 2 | 223 | 4 | (17) |
| L3-D-1 & 2<br>L4-D-1 & 2 | 193 | 8 | (18) |
| L5-D-1 & 2 | 194 | 4 | (19) |
| L6-D-1 & 2 & 4 | | 6 | |
| L7-D-1 & 2<br>L8-D-1 & 2 | 182 | 8 | (20) |
| L9-D-1 | 143 | 2 | (21) |
| L10-D-1 & 2<br>L12-D-1, L13-D-1 | 183 | 10 | (40) |
| L14-D-1 & 2 L15-D-1 & 2 | 184 | 7 | (41) |
| L16-D-1 & 3 | 143 | 4 | (22) |

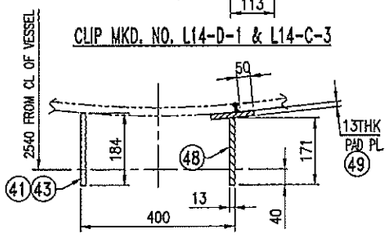



CLIP 'C' (FIXED TYPE)

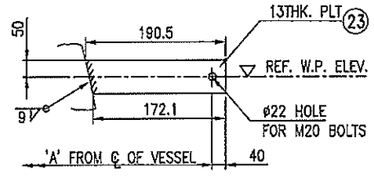
| TYPE 'C' | | | |
|---|---|---|---|
| CLIP MKD. NO. | "B" | QTY | POS NO |
| L1-C-2 & 4 | 212 | 4 | (24) |
| L2-C-3 | 194 | 2 | (25) |
| L3-C-3, L4-C-3<br>L5-C-3 | 194 | 6 | (26) |
| L6-C-3 & 5 | 192 | 4 | (27) |
| L7-C-3 | 182 | 2 | (28) |
| L9-C-2 | 143 | 2 | (29) |
| L8-C-3, L10-C-3<br>L11-C-1 & 2, L12-C-2 | 183 | 9 | (42) |
| L13-C-2, L14-C-3<br>L15-C-3 | 184 | 5 | (43) |
| L16-C-2 | 144 | 2 | (30) |



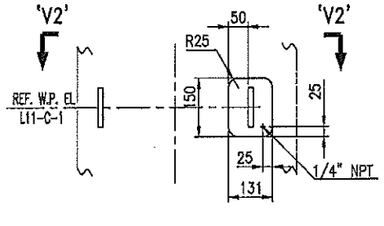

CLIP MKD. NO. L14-D-1 & L14-C-3



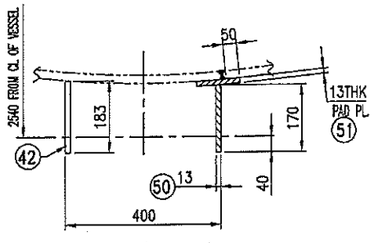

VIEW 'V1-V1'




CLIP MKD. NO. L16-D-4



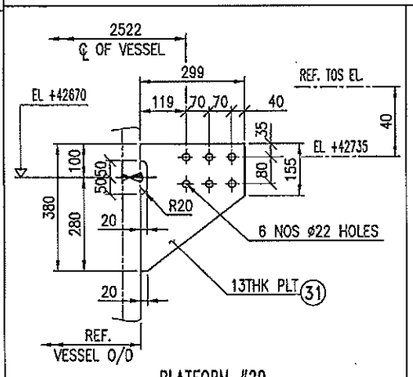

CLIP MKD. NO. L11-C-1



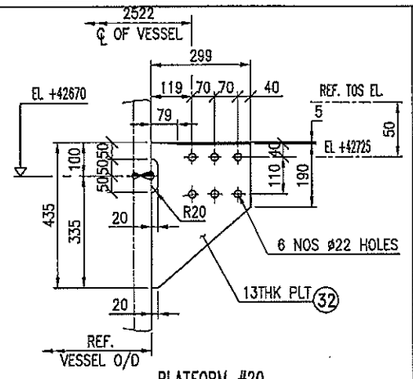

VIEW 'V2-V2'

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL WT. = 1874.4Kgs. | | | | | | | | |
| 51 | 1 | PAD PLATE | 150 | 131 | 13 | 2.0 | 2.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 50 | 1 | LADDER CLIP | 170 | 100 | 13 | 1.7 | 1.7 | SA516GR70N | 7478A03L05 | 747800-003 |
| 49 | 2 | R.F. PAD | 150 | 113 | 13 | 1.7 | 3.4 | SA516GR70N | 7478A03L05 | 747800-003 |
| 48 | 2 | LADDER CLIP | 171 | 100 | 13 | 1.7 | 3.4 | SA516GR70N | 7478A03L05 | 747800-003 |
| 47 | 6 | PLATFORM CLIP | 330 | 369 | 13 | 12.4 | 74.4 | SA516GR70N | 7478A03L05 | 747800-003 |
| 46 | 8 | PLATFORM CLIP | 430 | 299 | 13 | 13.1 | 104.8 | SA516GR70N | 7478A03L05 | 747800-003 |
| 44 | 3 | PLATFORM CLIP | 500 | 374 | 13 | 19.1 | 57.3 | SA516GR70N | 7478A03L05 | 747800-003 |
| 43 | 5 | LADDER CLIP | 184 | 100 | 13 | 1.9 | 9.5 | SA516GR70N | 7478A03L05 | 747800-003 |
| 42 | 9 | LADDER CLIP | 183 | 100 | 13 | 1.9 | 17.1 | SA516GR70N | 7478A03L05 | 747800-003 |
| 41 | 7 | LADDER CLIP | 184 | 100 | 13 | 1.9 | 13.3 | SA516GR70N | 7478A03L05 | 747800-003 |
| 40 | 10 | LADDER CLIP | 183 | 100 | 13 | 1.9 | 19.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 39 | 5 | PLATFORM CLIP | 395 | 299 | 13 | 12.1 | 60.5 | SA516GR70N | 7478A03L05 | 747800-003 |
| 38 | 3 | PLATFORM CLIP | 350 | 299 | 13 | 10.7 | 32.1 | SA516GR70N | 7478A03L05 | 747800-003 |
| 37 | 3 | PLATFORM CLIP | 520 | 319 | 13 | 16.9 | 50.7 | SA516GR70N | 7478A03L05 | 747800-003 |
| 36 | 3 | PLATFORM CLIP | 430 | 299 | 13 | 13.1 | 39.3 | SA516GR70N | 7478A03L05 | 747800-003 |
| 35 | 6 | PLATFORM CLIP | 380 | 299 | 13 | 11.6 | 69.6 | SA516GR70N | 7478A03L05 | 747800-003 |
| 34 | 7 | PLATFORM CLIP | 520 | 319 | 13 | 16.9 | 118.3 | SA516GR70N | 7478A03L05 | 747800-003 |
| 33 | 2 | PLATFORM CLIP | 430 | 299 | 13 | 13.1 | 26.2 | SA516GR70N | 7478A03L05 | 747800-003 |
| 32 | 10 | PLATFORM CLIP | 299 | 435 | 13 | 13.3 | 133.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 31 | 5 | PLATFORM CLIP | 299 | 380 | 13 | 11.6 | 58.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 30 | 2 | LADDER CLIP | 144 | 100 | 13 | 1.5 | 3.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 29 | 2 | LADDER CLIP | 143 | 100 | 13 | 1.5 | 3.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 28 | 2 | LADDER CLIP | 182 | 100 | 13 | 1.9 | 3.8 | SA516GR70N | 7478A03L05 | 747800-003 |
| 27 | 4 | LADDER CLIP | 192 | 100 | 13 | 2.0 | 8.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 26 | 6 | LADDER CLIP | 194 | 100 | 13 | 2.0 | 12.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 25 | 2 | LADDER CLIP | 194 | 100 | 13 | 2.0 | 4.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 24 | 4 | LADDER CLIP | 212 | 100 | 13 | 2.2 | 8.8 | SA516GR70N | 7478A03L05 | 747800-003 |
| 23 | 2 | LADDER CLIP | 190.5 | 100 | 13 | 1.9 | 3.8 | SA516GR70N | 7478A03L05 | 747800-003 |
| 22 | 4 | LADDER CLIP | 144 | 100 | 13 | 1.5 | 6.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 21 | 2 | LADDER CLIP | 143 | 100 | 13 | 1.5 | 3.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 20 | 8 | LADDER CLIP | 182 | 100 | 13 | 1.9 | 15.2 | SA516GR70N | 7478A03L05 | 747800-003 |
| 19 | 10 | LADDER CLIP | 194 | 100 | 13 | 2.0 | 20.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 18 | 8 | LADDER CLIP | 193 | 100 | 13 | 2.0 | 16.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 17 | 4 | LADDER CLIP | 223 | 100 | 13 | 2.3 | 9.2 | SA516GR70N | 7478A03L05 | 747800-003 |
| 16 | 4 | LADDER CLIP | 212 | 100 | 13 | 2.2 | 8.8 | SA516GR70N | 7478A03L05 | 747800-003 |
| 15 | 2 | PLATFORM CLIP | 297 | 239 | 13 | 7.2 | 14.4 | SA516GR70N | 7478A03L05 | 747800-003 |
| 14 | 2 | PLATFORM CLIP | 540 | 200 | 13 | 11.0 | 22.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 13 | 10 | PLATFORM CLIP | 267 | 212 | 13 | 5.8 | 58.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 12 | 10 | PLATFORM CLIP | 433 | 180 | 13 | 8.0 | 80.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 10 | 5 | PLATFORM CLIP | 445 | 299 | 13 | 13.6 | 68.0 | SA516GR70N | 7478A03L05 | 747800-003 |
| 6 | 1 | PLATFORM CLIP | 319 | 650 | 13 | 21.2 | 21.2 | SA516GR70N | 7478A03L05 | 747800-003 |
| 5 | 3 | PLATFORM CLIP | 319 | 450 | 13 | 14.6 | 43.8 | SA516GR70N | 7478A03L05 | 747800-003 |
| 4 | 22 | PLATFORM CLIP | 299 | 330 | 13 | 10.1 | 222.2 | SA516GR70N | 7478A03L05 | 747800-003 |
| 3 | 19 | PLATFORM CLIP | 299 | 260 | 13 | 8.5 | 161.5 | SA516GR70N | 7478A03L05 | 747800-003 |
| 2 | 14 | PLATFORM CLIP | 311 | 260 | 13 | 8.9 | 124.6 | SA516GR70N | 7478A03L05 | 747800-003 |
| 1 | 5 | PLATFORM CLIP | 285 | 260 | 13 | 8.1 | 40.5 | SA516GR70N | 7478A03L05 | 747800-003 |

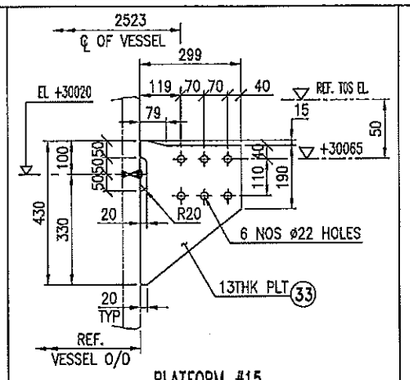
| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|



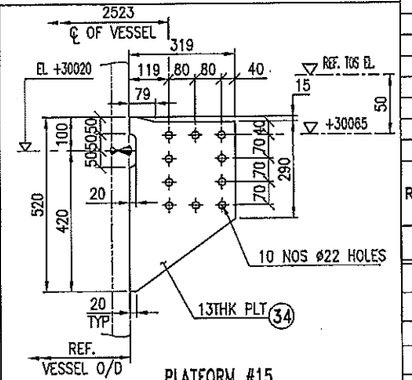

PLATFORM #20
P20-B15-1 TO 3,16 & 17(QTY-5 NOS)



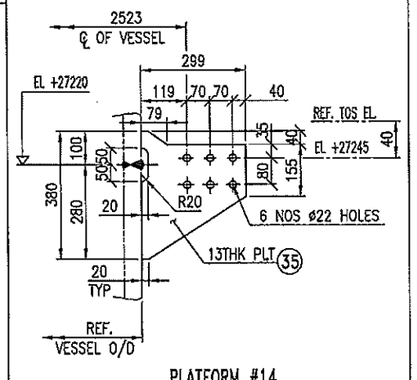

PLATFORM #20
P20-B20-4 TO 8, 11 TO 15(QTY-10 NOS)



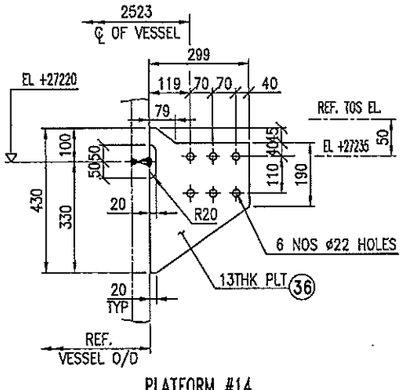

PLATFORM #15
P15-B20-1 & 2(QTY-2 NOS)



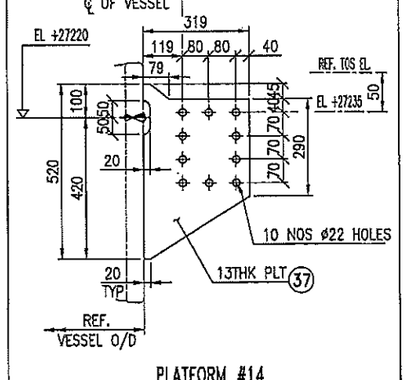

PLATFORM #15
P15-B25-3 TO 9(QTY-7 NOS)




PLATFORM #14
P14-B15-7 TO 12(QTY-6 NOS)




PLATFORM #14
P14-B20-4 TO 6(QTY-3 NOS)




PLATFORM #14
P14-B25-1 TO 3(QTY-3 NOS)

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( — ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) Y.K |
| Review Date : | '06 FEB.17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | - 2151-101-A | - 074 | - 00 |

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 7 | 19.12.05 | `AS BUILT' | Ganesh | JACOB | SUDHIR |
| 6 | 14.12.05 | REVISED AS PER CLIENT'S COMMENTS AS MARKED (6) | SunilL | JACOB | SUDHIR |
| 5 | 14.09.05 | REVISED AS PER CLIENT'S COMMENTS | SunilL | JACOB | SUDHIR |
| 4 | 07.09.05 | REVISED AS PER CLIENT'S COMMENTS | SunilL | JACOB | SUDHIR |
| 3 | 13.08.05 | REVISED AS PER CLIENT'S COMMENTS | SunilL | JACOB | SUDHIR |
| 2 | 4.08.05 | REVISED AS PER CLIENT COMMENTS & ISSUED FOR **CONSTRUCTION** | SunilL | JACOB SUDHIR | VINCENT |
| 1 | 14.07.05 | REVISED AS PER CLIENT COMMENTS & ISSUED FOR APPROVAL | SunilL | JACOB SUDHIR | VINCENT |
| 0 | 6.06.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | SunilL | JACOB SUDHIR | VINCENT |

LIST OF MATERIAL

| | |
|---|---|
| SCALE: | 1 : 125 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY - VINCENT | |
| DATE - 4.08.05 | |

BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
CLIP FOR PLATFORM & LADDER

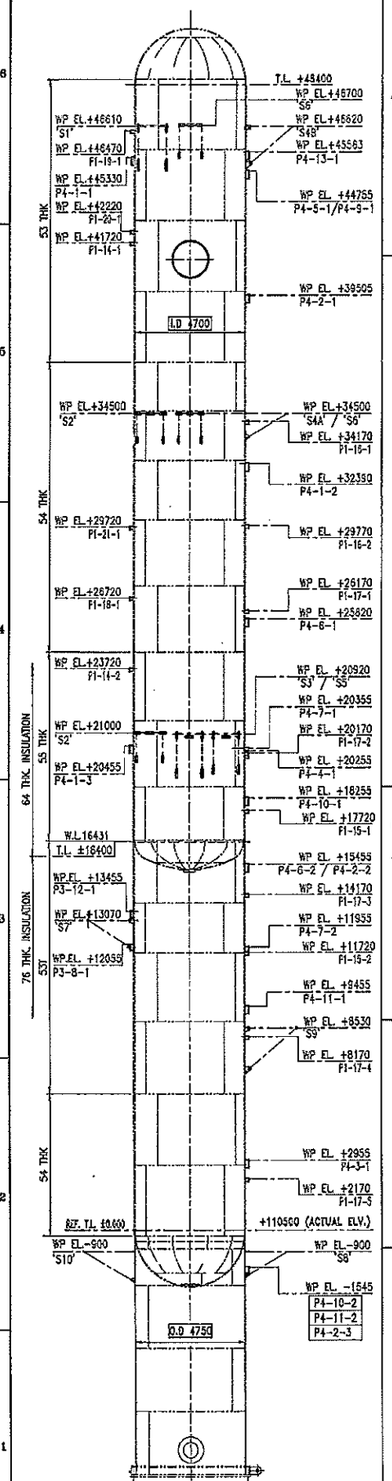
DRAWING NO. DA-7478-02-013 SHEET 2 OF 2
REV. 7


لايحق لأحد لقوام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقا من شركة بلفال للصناعات الثقيلة المحدودة.

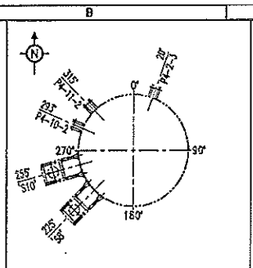
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITTEN BY BILFAL HEAVY IND. LTD.



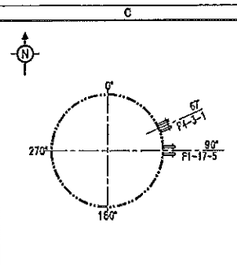
AS BUILT 17.FEB.06 DOC/99/0020138



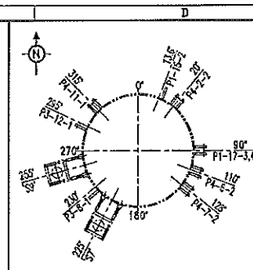

ELEVATION



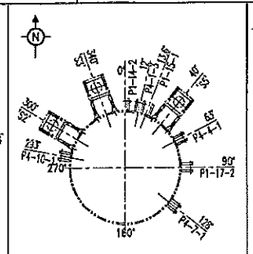
ORIENTATION OF PIPE SUPPORTS ON SKIRT



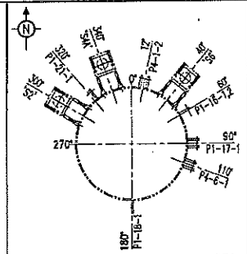
ORIENTATION OF PIPE SUPPORTS ON BOTTOM SHELL (54THK)



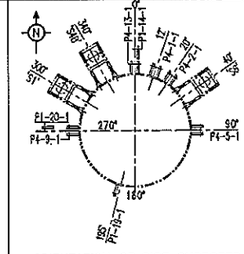
ORIENTATION OF PIPE SUPPORTS ON BOTTOM SHELL (53THK)



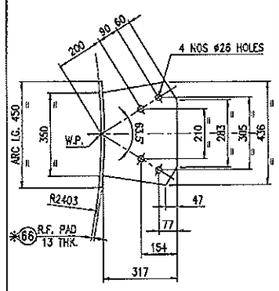
ORIENTATION OF PIPE SUPPORTS ON SHELL (55THK)



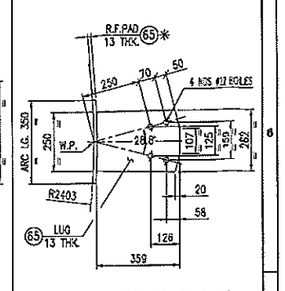
ORIENTATION OF PIPE SUPPORTS ON TOP SHELL (54THK)



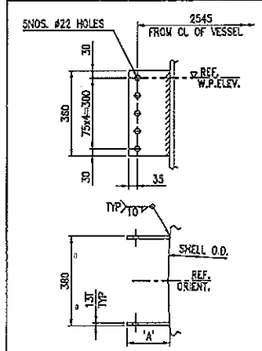
ORIENTATION OF PIPE SUPPORTS ON TOP SHELL (53THK)




DETAIL FOR POS. NO 65 & 66

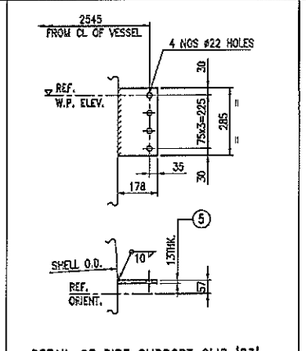



DETAIL FOR POS. NO 67 & 68

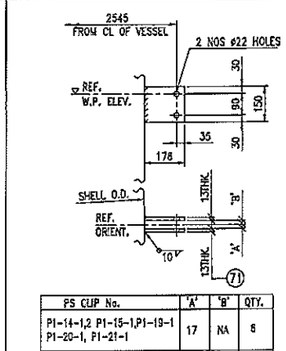



| PS CLIP No. | 'A' | POS. | QTY. |
|---|---|---|---|
| P4-10-2,P4-11-2,P4-2-3 | 212 | ① | 6 |
| P4-11-1, P4-2-1, P4-5-2, P4-2-2, P4-13-1, P4-5-1, P4-5-1 | 164 | ③ | 16 |
| P4-10-1, P4-7-1, P4-1-3, P4-7-1 | 162 | ④ | 7 |
| P4-5-1, P4-1-2 | 183 | ② | 4 |

DETAIL OF PIPE SUPPORT CLIPS 'P4'

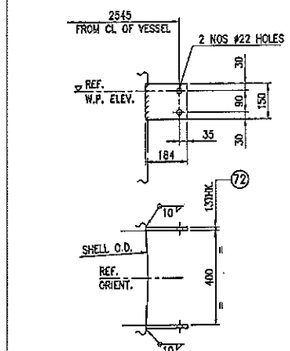



DETAIL OF PIPE SUPPORT CLIP 'P3'
(FOR P3-8-1, P3-12-1)

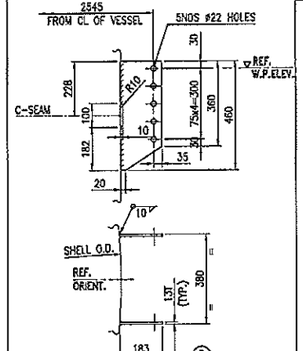



| PS CLIP No. | 'A' | 'B' | QTY. |
|---|---|---|---|
| P1-14-1,2 P1-15-1,P1-19-1 P1-20-1, P1-21-1 | 17 | NA | 6 |
| P1-16-1,2 P1-18-1 | NA | 0 | 3 |

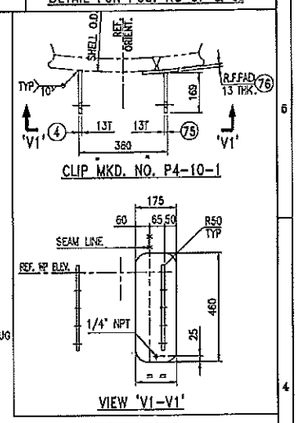
DETAIL OF PIPE SUPPORT CLIP 'P1'
(QTY. REQD 9 NOS.)

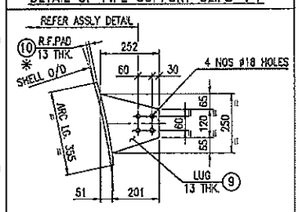



DETAIL OF PIPE SUPPORT CLIP 'P1'
(P1-17-1 TO 5) (QTY. REQD 5 NOS.)

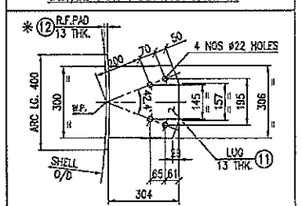



DETAIL OF PIPE SUPPORT CLIPS 'P4'
(FOR P4-3-1)

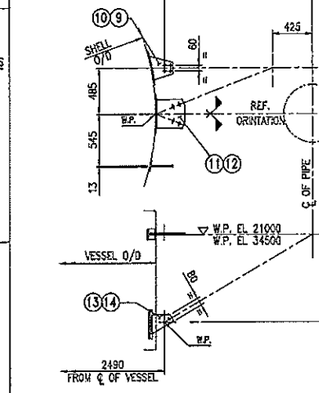


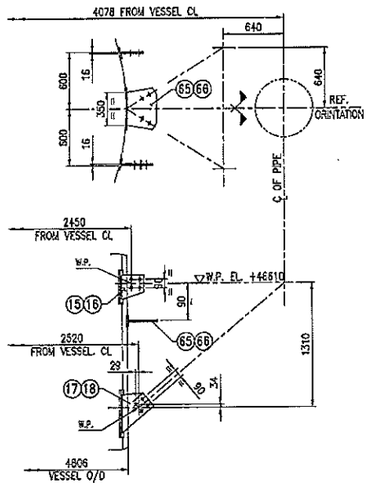

DETAIL FOR POS. NO 9 & 10



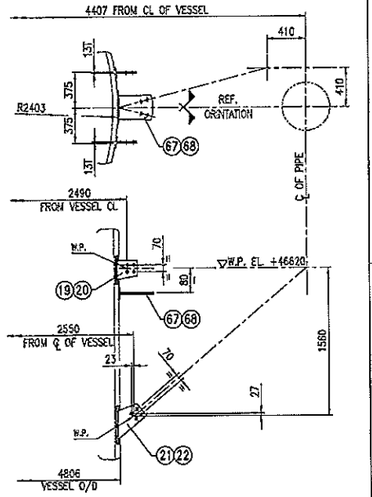

DETAIL FOR POS. NO 11 & 12



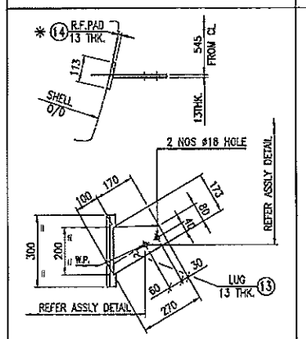

ASSEMBLY DETAILS OF PIPE SUPPORT 'S2'



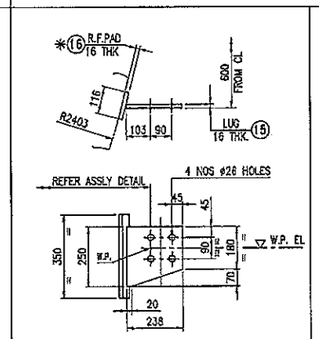

ASSEMBLY DETAILS OF PIPE SUPPORT 'S1'



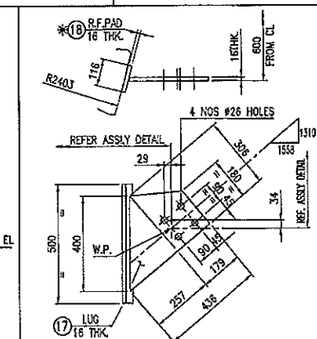

ASSEMBLY DETAILS OF PIPE SUPPORT 'S4B'



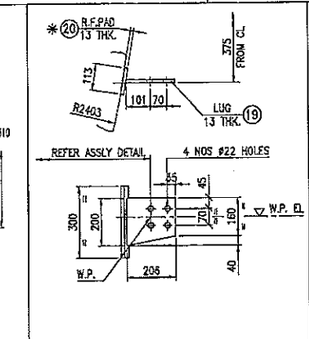

DETAIL FOR POS. NO 13 & 14



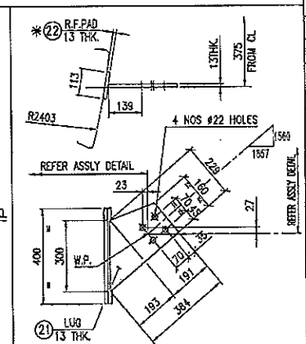

DETAIL FOR POS. NO 15 & 16




DETAIL FOR POS. NO 17 & 18




DETAIL FOR POS. NO 19 & 20




DETAIL FOR POS. NO 21 & 22

## LEGEND :-

✳ FOR CONNECTION DETAIL FOR R.F. PAD & LUG REF. SHT 3 OF 4

## NOTES :-

1) ALL DIMENSIONS ARE IN mm
2) ALL ELEVATIONS ARE IN mm
3) ALL WP ELEVATIONS FOR PIPE SUPPORT TYPE 'P' ARE REFER FROM ELEVATION INDICATED IN JGC DRG. D-032-1352-064 REV. C02
4) ALL WP ELEVATIONS FOR PIPE SUPPORT TYPE 'S' ARE REFER FROM ELEVATION INDICATED IN JGC DRG. D-032-1352-060 REV. C02
5) ALL WORK POINT ELEVATIONS (WP EL) ARE REFER FROM THE BOTTOM TAN LINE ELEVATION OF VESSEL (CONSIDERED ±0.00)
6) ALL WELDS ARE 10mm FILLET CONT. (UNLESS NOTED OTHERWISE)

## REFERENCE DRAWINGS

1) FOR LIST OF MATERIALS REFER SHT 3 OF 4 - D-032-1352-060 REV. C03 & 064 REV. C02
2) FOR PIPE SUPPORT ELEVATION & LAYOUT - D-032-1352-060 REV. C03 & 064 REV. C02
3) DETAILS OF PIPE SUPPORT TYPE 'P' - D-060-1352-012 REV. C00
4) DETAILS OF PIPE SUPPORT TYPE 'S' - D-032-1352-065 REV. C00
- D-032-1352-066 REV. C00
- D-032-1352-067 REV. C00
- D-032-1352-068 REV. C01
- D-032-1352-069 REV. C00

| JCP Project (JCB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( - ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | EQP/VI |
| Review Date : | 06.FEB.17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Satisfied to

Approval or review hereon for shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liab lity under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | - 2151-101-A - 075 - 00 | | |

BILFAL HEAVY INDUSTRIES LTD.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 5 | 19.12.05 | 'AS BUILT' | | JACOB | SUCHER |
| 4 | 14.12.05 | REVISED AS PER CLIENT'S COMMENTS | | JACOB | SUCHER |
| 3 | 07.09.05 | REVISED AS PER CLIENT'S COMMENTS | | JACOB | SUCHER |
| 2 | 20.08.05 | REVISED AS PER CLIENT'S COMMENTS | | JACOB | SUCHER |
| 1 | 16.08.05 | REVISED AS PER CLIENT'S COMMENTS & ISSUED FOR CONSTRUCTION | | JACOB SUCHER | VINCENT |
| 0 | 14.06.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | | JACOB SUCHER | VINCENT |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD.

SCALE: 1 : 125
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY - VINCENT
DATE - 16.08.05

BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة المحدودة الجبيل

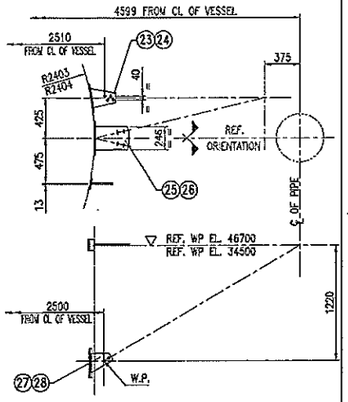
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
CLIPS FOR PIPE SUPPORTS/GUIDES

DRAWING NO.
DA-7478-02-014
SHT. 2 OF 4

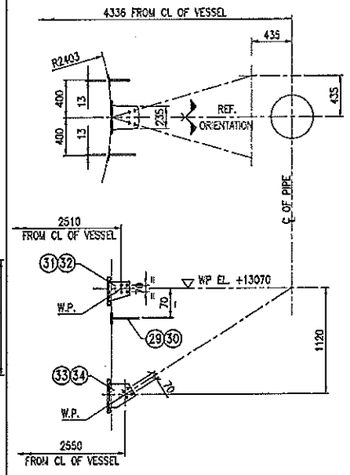
SHEET SIZE : 841x594

الأجزاء الأصلية الواردة في هذه الرسومات الفنية هي ملك لشركة بلفال للصناعات الثقيلة المحدودة ولا يجوز إعادة إنتاجها أو أي جزء من الإفصاح عن محتوياتها بطريقة مباشرة أو غير مباشرة بدون الحصول على موافقة خطية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.

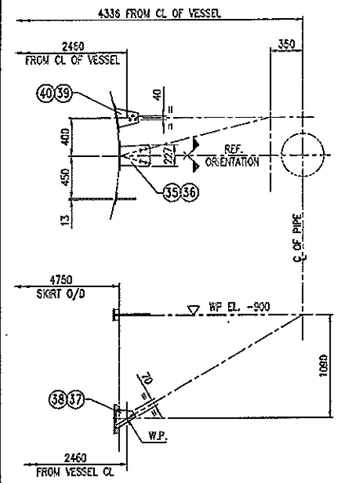
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL SAUDI HEAVY IND. LTD.



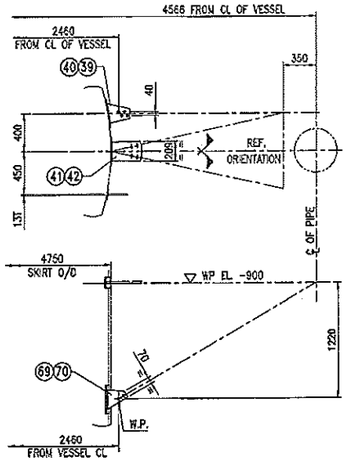

ASSEMBLY DETAILS OF PIPE SUPPORT 'S6'



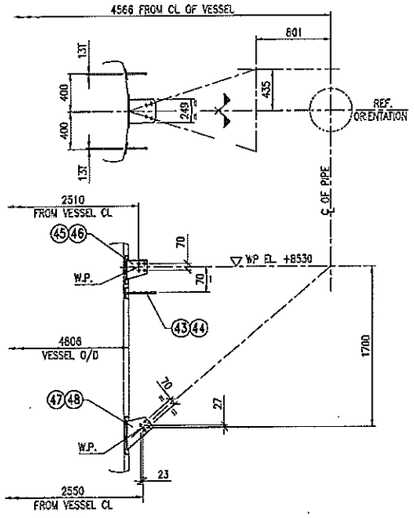

ASSEMBLY DETAILS OF PIPE SUPPORT 'S7'



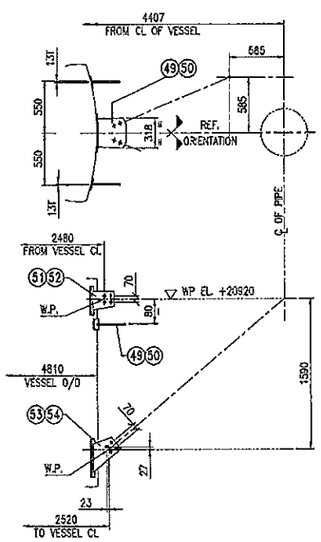

ASSEMBLY DETAILS OF PIPE SUPPORT 'S8'



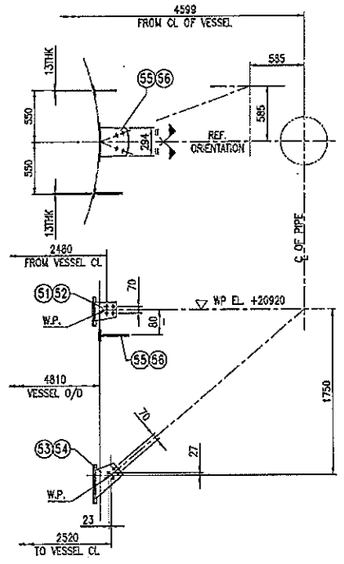

ASSEMBLY DETAILS OF PIPE SUPPORT 'S10'



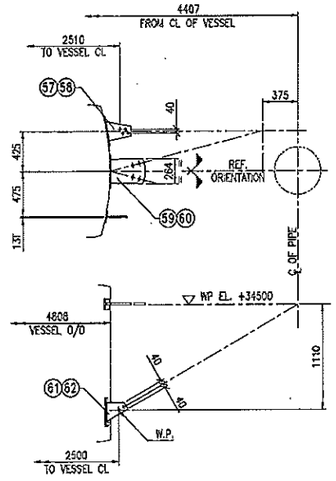

ASSEMBLY DETAILS OF PIPE SUPPORT 'S9'



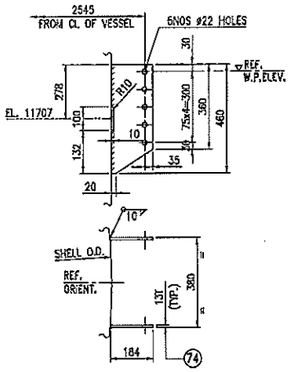

ASSEMBLY DETAILS OF PIPE SUPPORT 'S3'



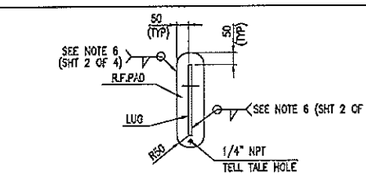

ASSEMBLY DETAILS OF PIPE SUPPORT 'S5'



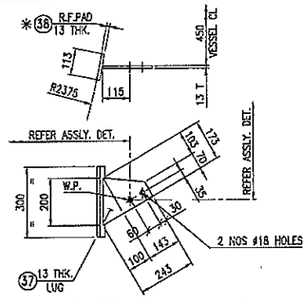

ASSEMBLY DETAILS OF PIPE SUPPORT 'S4A'



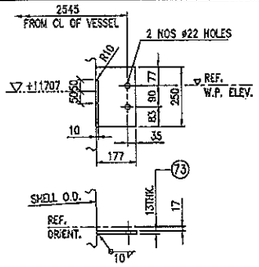

DETAIL OF PIPE SUPPORT CLIPS 'P4'
(FOR P4-7-2)



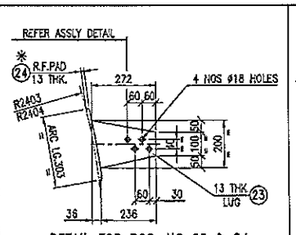

* TYP CONNECTION DETAILS FOR PAD & LUG



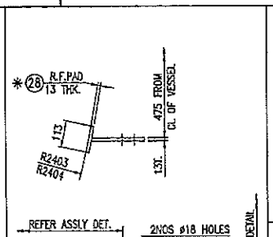

DETAILS FOR POS. NO 37 & 38



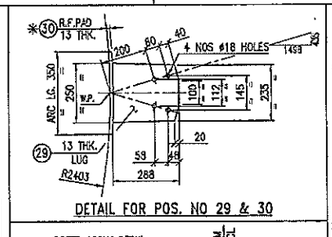

DETAIL OF PIPE SUPPORT CLIPS 'P1'
(FOR P1-15-2)



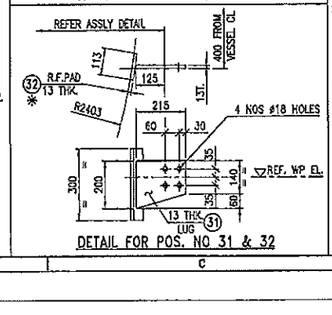

DETAIL FOR POS. NO 23 & 24



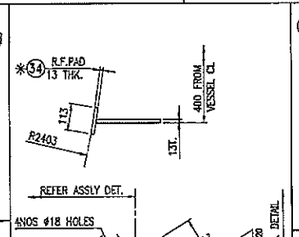

DETAIL FOR POS. NO 27 & 28



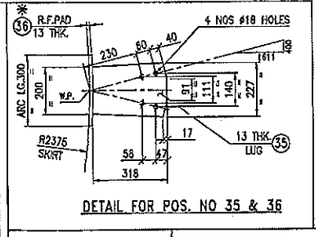

DETAIL FOR POS. NO 29 & 30



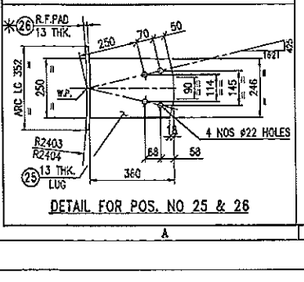

DETAIL FOR POS. NO 31 & 32




DETAIL FOR POS. NO 33 & 34




DETAIL FOR POS. NO 35 & 36




DETAIL FOR POS. NO 25 & 26

| REF. | ITEM NO. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 82 | 2 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 7.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 81 | 2 | SUPPORT LUG | 284 | 173 | 13.0 | 4.7 | 9.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 80 | 1 | R.F. PAD | 350 | 113 | 13.0 | 4.0 | 4.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 56 | 1 | SUPPORT LUG | 356 | 264 | 13.0 | 9.6 | 9.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 58 | 2 | R.F. PAD | 303 | 113 | 13.0 | 3.5 | 7.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 57 | 2 | SUPPORT LUG | 271 | 200 | 13.0 | 5.5 | 11.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 55 | 1 | R.F. PAD | 402 | 113 | 13.0 | 4.6 | 4.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 55 | 1 | SUPPORT LUG | 306 | 264 | 13.0 | 9.2 | 9.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 54 | 4 | R.F. PAD | 400 | 113 | 13.0 | 4.6 | 18.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 53 | 4 | SUPPORT LUG | 335 | 229 | 13.0 | 9.0 | 36.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 52 | 4 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 14.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 51 | 4 | SUPPORT LUG | 227 | 200 | 13.0 | 4.6 | 18.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 50 | 1 | R.F. PAD | 402 | 113 | 13.0 | 4.6 | 4.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 49 | 1 | SUPPORT LUG | 318 | 303 | 13.0 | 9.8 | 9.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 48 | 2 | R.F. PAD | 400 | 113 | 13.0 | 4.6 | 9.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 47 | 2 | SUPPORT LUG | 356 | 229 | 13.0 | 8.6 | 17.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 46 | 2 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 7.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 45 | 2 | SUPPORT LUG | 215 | 200 | 13.0 | 4.4 | 8.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 44 | 1 | R.F. PAD | 351 | 113 | 13.0 | 4.0 | 4.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 43 | 1 | SUPPORT LUG | 287 | 250 | 13.0 | 7.3 | 7.3 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 42 | 1 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 3.5 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 41 | 1 | SUPPORT LUG | 319 | 209 | 13.0 | 6.8 | 6.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 40 | 4 | R.F. PAD | 303 | 113 | 13.0 | 3.5 | 14.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 39 | 4 | SUPPORT LUG | 245 | 200 | 13.0 | 5.0 | 23.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 38 | 2 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 7.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 37 | 2 | SUPPORT LUG | 243 | 173 | 13.0 | 4.3 | 8.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 35 | 1 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 3.5 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 35 | 1 | SUPPORT LUG | 318 | 227 | 13.0 | 7.4 | 7.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 34 | 2 | R.F. PAD | 400 | 113 | 13.0 | 4.6 | 9.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 33 | 2 | SUPPORT LUG | 325 | 230 | 13.0 | 8.6 | 17.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 32 | 2 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 7.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 31 | 2 | SUPPORT LUG | 215 | 200 | 13.0 | 4.4 | 8.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 30 | 1 | R.F. PAD | 350 | 113 | 13.0 | 4.0 | 4.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 29 | 1 | SUPPORT LUG | 269 | 235 | 13.0 | 6.9 | 6.9 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 28 | 4 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 14.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 27 | 4 | SUPPORT LUG | 265 | 173 | 13.0 | 4.7 | 18.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 26 | 2 | R.F. PAD | 352 | 113 | 13.0 | 4.0 | 8.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 25 | 2 | SUPPORT LUG | 350 | 245 | 13.0 | 9.0 | 18.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 24 | 4 | R.F. PAD | 303 | 113 | 13.0 | 3.5 | 14.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 23 | 4 | SUPPORT LUG | 272 | 200 | 13.0 | 5.6 | 22.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 22 | 2 | R.F. PAD | 400 | 113 | 13.0 | 4.6 | 9.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 21 | 2 | SUPPORT LUG | 324 | 229 | 13.0 | 9.0 | 18.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 20 | 2 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 7.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 19 | 2 | SUPPORT LUG | 206 | 200 | 13.0 | 4.2 | 8.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 18 | 2 | R.F. PAD | 500 | 116 | 16.0 | 7.3 | 14.6 | SA516GR70N | 7478A01L03 | 747800-001 | |
| | 17 | 2 | SUPPORT LUG | 436 | 306 | 16.0 | 16.8 | 33.6 | SA516GR70N | 7478A01L03 | 747800-001 | |
| | 16 | 2 | R.F. PAD | 350 | 116 | 16.0 | 5.1 | 10.2 | SA516GR70N | 7478A01L03 | 747800-001 | |
| | 15 | 2 | SUPPORT LUG | 250 | 238 | 16.0 | 7.5 | 15.2 | SA516GR70N | 7478A01L03 | 747800-001 | |
| | 14 | 4 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 14.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 13 | 4 | SUPPORT LUG | 270 | 173 | 13.0 | 4.8 | 19.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 12 | 2 | R.F. PAD | 400 | 113 | 13.0 | 4.6 | 9.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 11 | 2 | SUPPORT LUG | 354 | 306 | 13.0 | 9.5 | 19.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 10 | 4 | R.F. PAD | 365 | 113 | 13.0 | 4.1 | 16.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 9 | 4 | SUPPORT LUG | 252 | 250 | 13.0 | 6.4 | 25.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 8 | 2 | PIPE SUPPORT PLATE | 460 | 183 | 13.0 | 6.6 | 17.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 7 | | DELETED | | | | | | | | | |
| | 6 | | DELETED | | | | | | | | | |
| | 5 | 2 | PIPE SUPPORT PLATE | 285 | 178 | 13.0 | 5.2 | 10.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 4 | 7 | PIPE SUPPORT PLATE | 360 | 182 | 13.0 | 6.7 | 46.9 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 3 | 16 | PIPE SUPPORT PLATE | 360 | 184 | 13.0 | 6.8 | 108.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 2 | 4 | PIPE SUPPORT PLATE | 360 | 183 | 13.0 | 6.7 | 26.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 1 | 6 | PIPE SUPPORT PLATE | 360 | 212 | 13.0 | 7.8 | 46.8 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 76 | 1 | R.F. PAD | 460 | 175 | 13.0 | 8.2 | 8.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 75 | 1 | PIPE SUPPORT PLATE | 360 | 169 | 13.0 | 6.2 | 6.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 74 | 2 | PIPE CLIP | 184 | 460 | 13.0 | 8.6 | 17.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 73 | 1 | PIPE CLIP | 177 | 250 | 13.0 | 4.5 | 4.5 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 72 | 10 | PIPE CLIP | 184 | 150 | 13.0 | 2.8 | 27.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 71 | 9 | PIPE CLIP | 176 | 150 | 13.0 | 2.7 | 23.4 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 70 | 2 | R.F. PAD | 300 | 113 | 13.0 | 3.5 | 7.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 69 | 2 | SUPPORT LUG | 250 | 168 | 13.0 | 4.3 | 8.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 68 | 1 | R.F. PAD | 350 | 113 | 13.0 | 4.0 | 4.0 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 67 | 1 | SUPPORT LUG | 358 | 262 | 13.0 | 9.6 | 9.6 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 66 | 1 | R.F. PAD | 450 | 113 | 13.0 | 5.2 | 5.2 | SA516GR70N | 7478A03L05 | 747800-003 | |
| | 65 | 1 | SUPPORT LUG | 436 | 317 | 13.0 | 14.1 | 14.1 | SA516GR70N | 7478A03L05 | 747800-003 | |

TOTAL WT. =1047.1Kgs.

## LIST OF MATERIAL

JCP Project (JOB No. : 0-3515-20)

| | |
|---|---|
| ISSUE PURPOSE : | A9 |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | PDMTL 06FEB17 |
| Review Data : | |

A : Approved without Comment; B: Approved/Reviewed
R : Rejected Incorporating comments; F: Not Subject to
Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of his responsibilities and liability under the contract.

| JOC DOC. NO. | ORIG. PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|
| | V – 2151-101-A – 076 – 00 | | |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 6 | 19.12.05 | 'AS BUILT' | Sunil | JACOB | SUDHIR |
| 5 | 14.12.05 | REVISED AS PER CLIENTS COMMENTS | Sunil | JACOB | SUDHIR |
| 4 | 14.09.05 | REVISED AS PER CLIENTS COMMENTS | Sunil | JACOB | SUDHIR |
| 3 | 07.09.05 | REVISED AS PER CLIENTS COMMENTS | Sunil | JACOB | SUDHIR |
| 2 | 20.08.05 | REVISED AS PER CLIENTS COMMENTS | Sunil | JACOB | SUDHIR |
| 1 | 16.08.05 | REVISED AS PER CLIENTS COMMENTS & ISSUED FOR CONSTRUCTION | Sunil | JACOB | VINCENT |
| 0 | 13.06.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Sunil | JACOB | VINCENT |

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD.

SCALE: 1 : 125

CLIENT: JGC CORPORATION, JAPAN

ORDER: 0-3515-P-2151-101-A

APPROVED FOR CONSTRUCTION
BY – VINCENT
DATE – 16.08.05

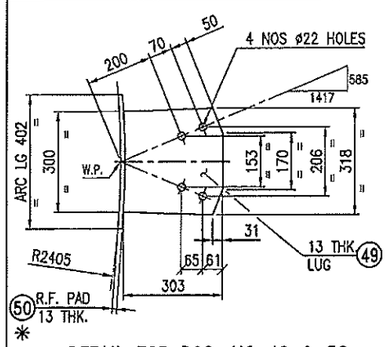
BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
CLIPS FOR PIPE SUPPORTS/GUIDES

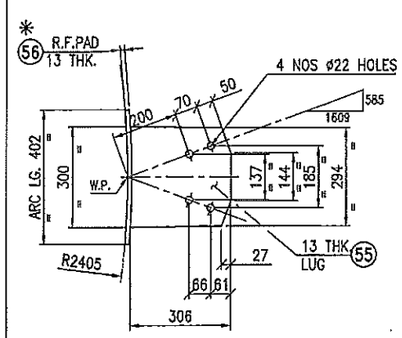
DRAWING NO.
DA-7478-02-014
SHT 3 OF 4
REV. 6


هذا الرسم الهندسي ملكية أو حقوق أو حقوق النشر لشركة بلفال الثقيلة المحدودة. لا يجوز نسخ أو إعادة إنتاج هذا الرسم أو أي جزء منه بأي شكل من الأشكال أو استخدامه لأي غرض إلا بموافقة مسبقة من شركة بلفال الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

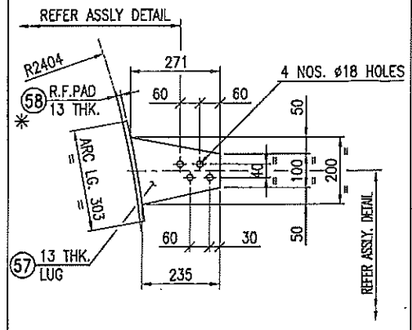

AS BUILT



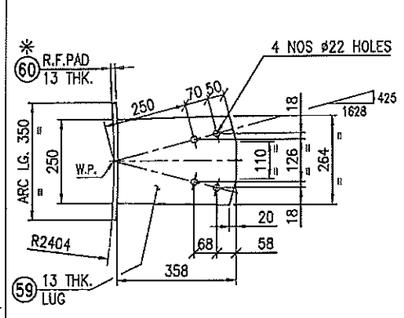

DETAIL FOR POS. NO 49 & 50




DETAIL FOR POS. NO 55 & 56




DETAIL FOR POS. NO 57 & 58



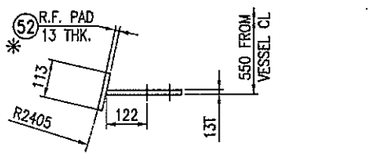

DETAIL FOR POS. NO 59 & 60

LEGEND :-

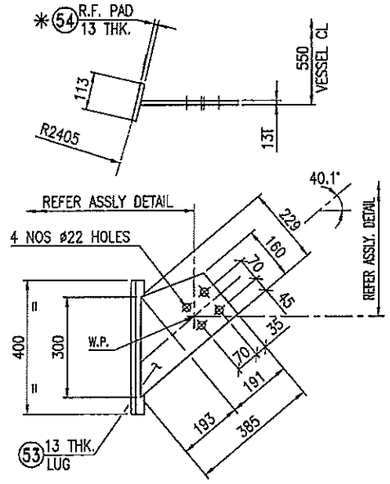
✳ FOR CONNECTION DETAIL FOR R.F. PAD & LUG REF. SHT 3 OF 4

REFERENCE DRAWINGS

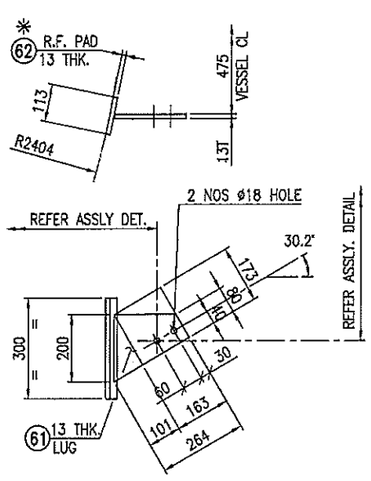
1) ORIENTATION OF PIPE SUPPORT – SHT 2 OF 4
2) ASSEMBLY DETAILS OF PIPE SUPPORT – SHT 3 OF 4




DETAIL FOR POS. NO 51 & 52




DETAIL FOR POS. NO 53 & 54

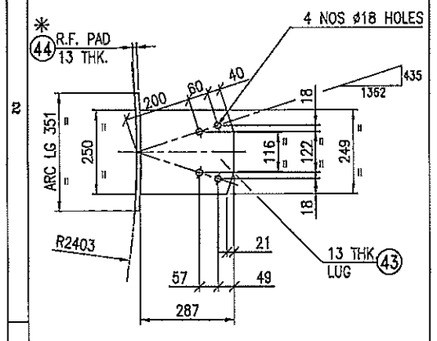



DETAIL FOR POS. NO 61 & 62

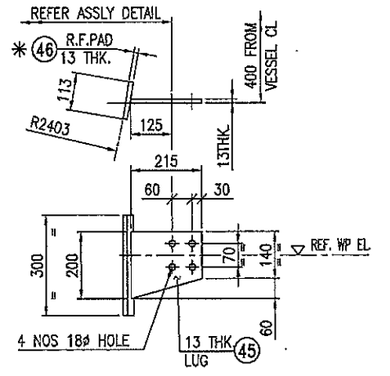
DELETED

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

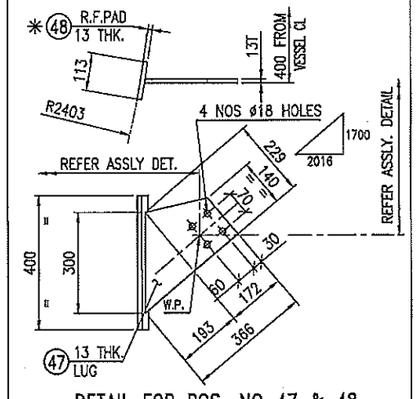
| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) |
| Review Date : | (06 FEB. '17 |
| A : Approved without Comment; B: Approved/Reviewed R : Resubmit incorporating comments; F: Not Subject to | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract. | |
| JGC DOC. NO. | ORIG. PURCHASE ORDER No. SERIAL REV. V – 2151–101–A – 077 – 00 |



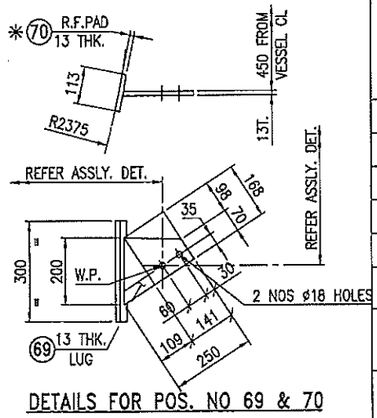

DETAIL FOR POS. NO 43 & 44




DETAIL FOR POS. NO 45 & 46

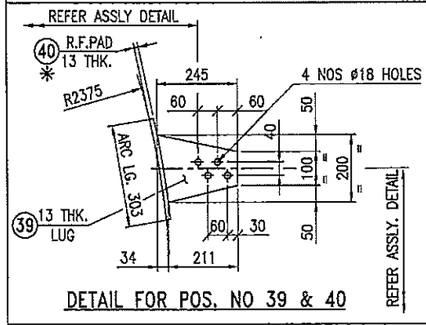



DETAIL FOR POS. NO 47 & 48

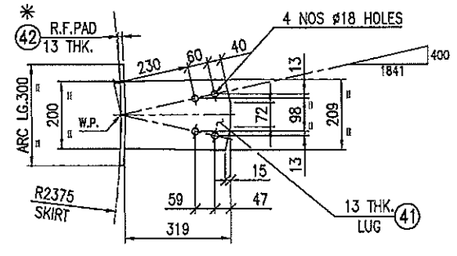



DETAILS FOR POS. NO 69 & 70

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.05 | `AS BUILT' | Ganesh | JACOB | SUDHIR |
| 2 | 07.09.05 | GENERALLY REVISED | SuniL | JACOB SUDHIR | VINCENT |
| 1 | 16.08.05 | REVISED AS PER CLIENTS COMMENTS & ISSUED FOR CONSTRUCTION | SuniL | JACOB SUDHIR | VINCENT |
| 0 | 14.06.05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | SuniL | JACOB SUDHIR | VINCENT |




DETAIL FOR POS. NO 39 & 40




DETAIL FOR POS. NO 41 & 42

FORMERLY : BELLELI SAUDI HEAVY INDUSTRIES LTD. بيليلي السعودية للصناعات الثقيلة المحدودة

| | |
|---|---|
| SCALE: | 1 : 125 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE.. | 16.08.05 |

BILFAL HEAVY INDUSTRIES Ltd. AL- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

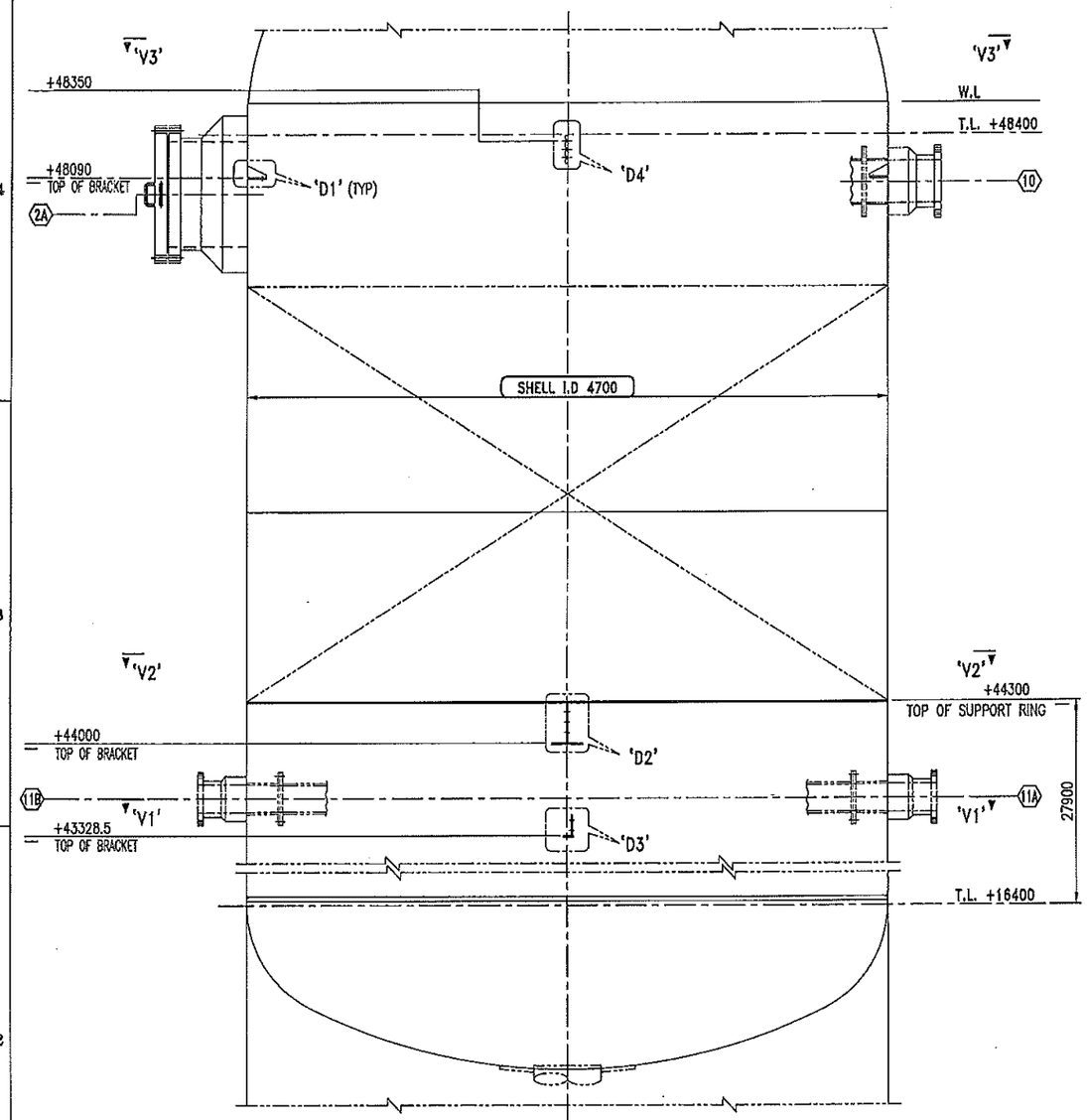
JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
CLIP FOR PIPE SUPPORT/GUIDES

DRAWING NO. DA-7478-02-014 SHEET 4 OF 4 REV. 3

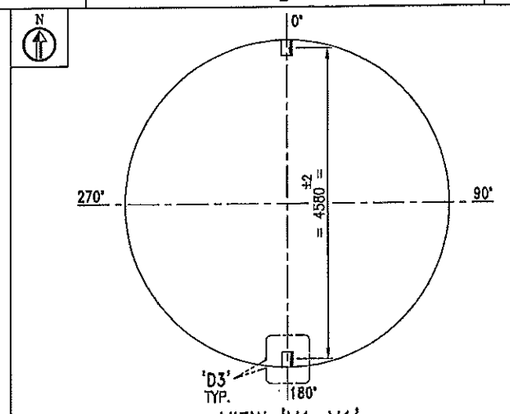
لايحق لأحد القيام بانتاج هذا الرسم الهندسي كليا أو جزئيا أو إستغلالها لأي غرض إلابالحصول على موافقة خطية مسبقة من شركة بلفال للصناعات الثقيلة المحدودة.

THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

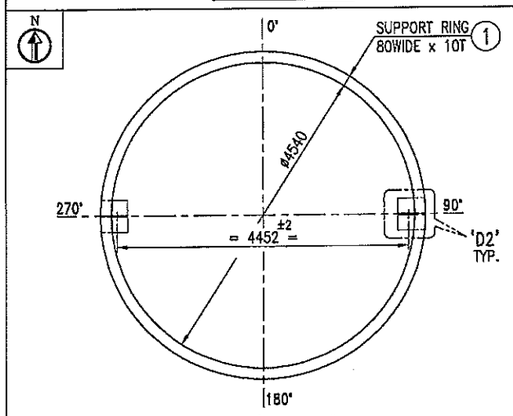
AS BUILT 17-FEB-17 FILE NAME : DA7478020140



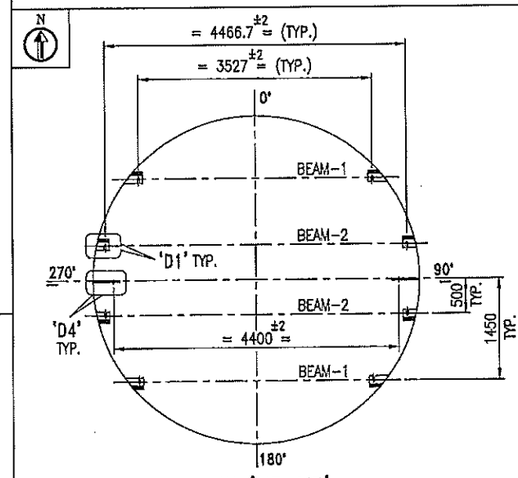

ELEVATION




VIEW 'V1-V1'




VIEW 'V2-V2'




VIEW 'V3-V3'

TOTAL WT. = 126.0 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 2 | SUP. CLIP | 200 | 200 | 10.0 | 3.1 | 6.2 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 9 | 2 | SUP. PLATE | 110 | 80 | 10.0 | 0.7 | 1.4 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 8 | 2 | SUP. CLIP | 150 | 110 | 10.0 | 1.3 | 2.6 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 7 | 2 | SUP. PLATE | 230 | 200 | 10.0 | 3.6 | 7.2 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 6 | 2 | SUP. CLIP | 290 | 200 | 10.0 | 4.6 | 9.2 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 5 | 4 | GUSSET PLATE | 84 | 80 | 10.0 | 0.5 | 2.0 | SA516GR70N | 7478A03L03 | 747800-003 | BEAM-2 |
| | 4 | 4 | GUSSET PLATE | 84 | 80 | 10.0 | 0.5 | 2.0 | SA516GR70N | 7478A03L03 | 747800-003 | BEAM-1 |
| | 3 | 4 | SUP. PLATE | 99 | 80 | 10.0 | 0.6 | 2.4 | SA516GR70N | 7478A03L03 | 747800-003 | BEAM-2 |
| | 2 | 4 | SUP. PLATE | 139 | 80 | 10.0 | 0.9 | 3.6 | SA516GR70N | 7478A03L03 | 747800-003 | BEAM-1 |
| | 1 | 1 | SUP. RING 4697/4540 | 0 | 0 | 10.0 | 89.4 | 89.4 | SA516GR70N | 7478A03L03 | 747800-003 | IN SEGMENTS |

## LIST OF MATERIAL

| | |
|---|---|
| JCP Project (JOB No. : 0-3515-20) | |
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( — ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) T.K. |
| Review Date : | '06 FEB. 17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | - 2151-101-A | - 080 | - 00 |

BILFAL HEAVY INDUSTRIES Ltd.
**AS BUILT**
CERTIFIED BY.....

| | | | | | |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | REVISED AS MARKED 3 & 'AS BUILT' | KIRIT | HUSAIN | SP |
| 2 | 01.08.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED 2 | Raju | JAP/SP | VINCENT |
| 1 | 12.07.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED 1 & ISSUED FOR **CONSTRUCTION** | Raju | JAP/SP | VINCENT |
| 0 | 20.06.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Raju | JAP/SP | VINCENT |
| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليالي السعودية للصناعات الثقيلة المحدودة

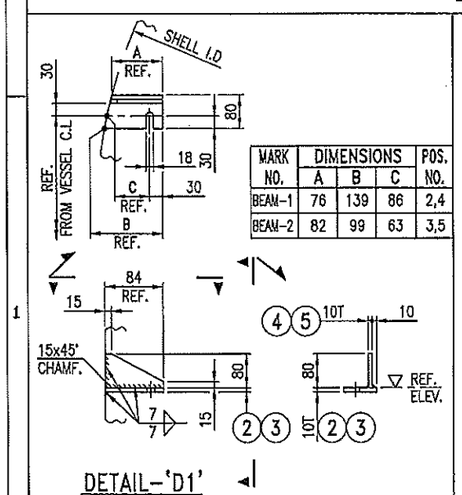
SCALE: 1 : 30
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION
BY..... VINCENT
DATE..12.07.'05

BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
DETAIL OF BED LIMITER SUPPORT

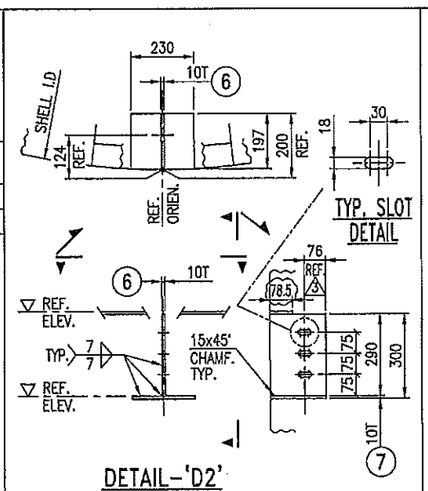
DRAWING NO. DA-7478-02-020
REV. 3

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقامن شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

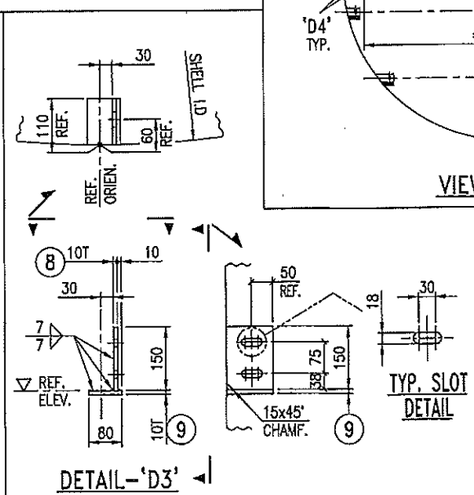



| MARK NO. | DIMENSIONS A | B | C | POS. NO. |
|---|---|---|---|---|
| BEAM-1 | 76 | 139 | 86 | 2,4 |
| BEAM-2 | 82 | 99 | 63 | 3,5 |

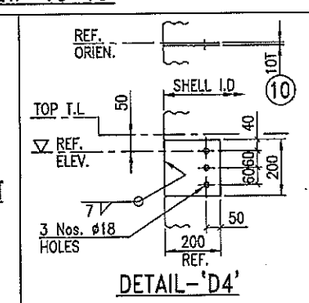
DETAIL-'D1'



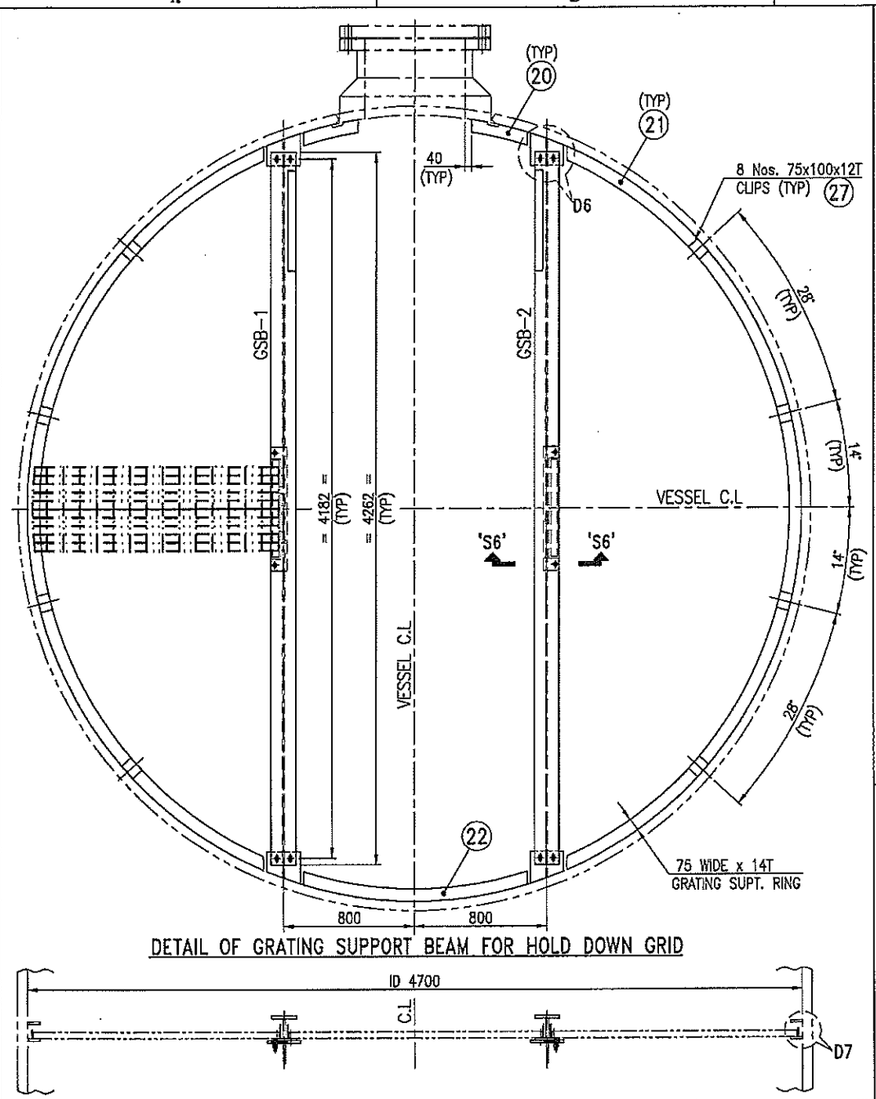

DETAIL-'D2'




DETAIL-'D3'

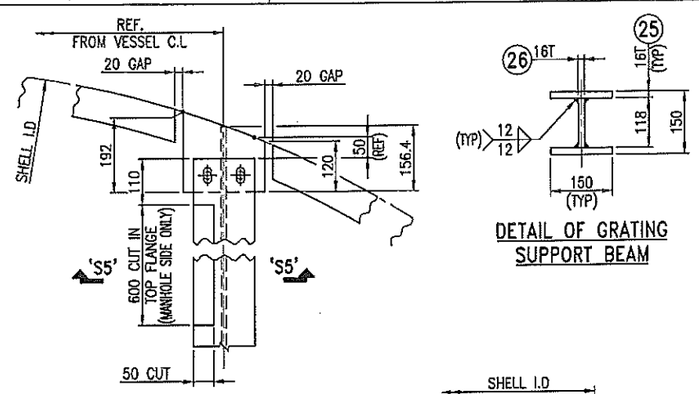



DETAIL-'D4'

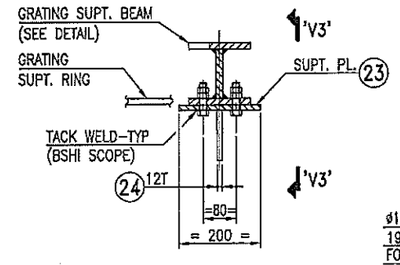


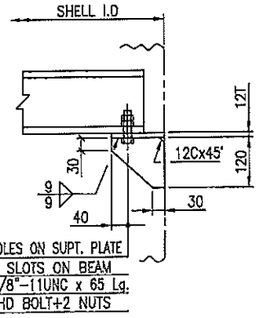

DETAIL OF GRATING SUPPORT BEAM FOR HOLD DOWN GRID




SECTION 'S5-S5'



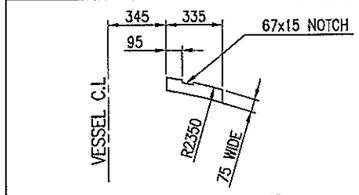




VIEW 'V3-V3'

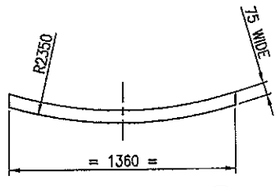



DETAIL OF GRATING SUPPORT BEAM

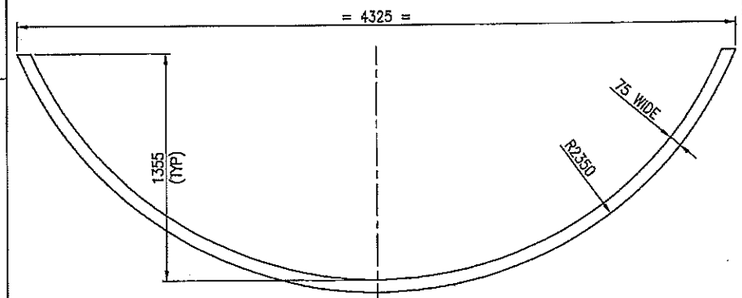
DETAIL-'D6'
(TYP. FOR GSB-1&2)



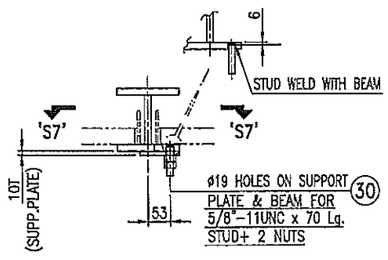

DETAIL OF POS. No. 20



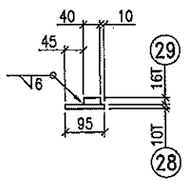

DETAIL OF POS. No. 22



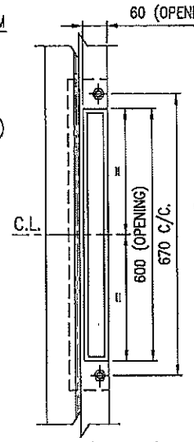

DETAIL OF POS. No. 21



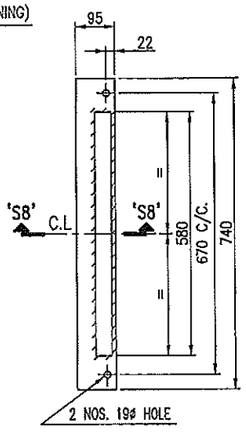

SECTION 'S6-S6'



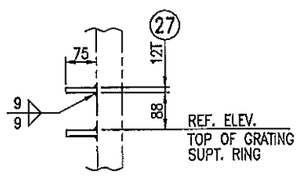

SECTION 'S8-S8'




SECTION 'S7-S7'




DETAIL OF SUPPORT PLATE




DETAIL-'D7'

TOTAL WT. = 20202 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | 34 | ST+2NT 5/8" UNC | 70 | 0 | 0 | 0.2 | 6.8 | SS304 | 7385A62801 | STOCK | 32+2 SPARE |
| | 29 | 16 | SPACER PLATE | 580 | 40 | 16.0 | 3.0 | 48.0 | SA516GR70N | 7478A25L01 | 747800-025 | |
| | 28 | 16 | SUPPORT PLATE | 740 | 95 | 10.0 | 5.5 | 88.0 | SA516GR70N | 7478A03L03 | 747800-003 | |
| | 27 | 64 | CLIPS | 100 | 75 | 12.0 | 0.7 | 44.8 | SA516GR70N | 7478A01L05 | 747800-001 | |
| | 26 | 16 | WEB PLATE | 4262 | 118 | 16.0 | 63.2 | 1011.2 | SA516GR70N | 7478A25L01 | 747800-025 | GSB 1&2 |
| | 25 | 32 | FLANGE PLATE | 4262 | 150 | 16.0 | 80.3 | 2569.6 | SA516GR70N | 7478A25L01 | 747800-025 | GSB 1&2 |
| | 24 | 32 | RIB PLATE | 157 | 120 | 12.0 | 1.8 | 57.6 | SA516GR70N | 7478A01L05 | 747800-001 | GSB 1&2 |
| | 23 | 32 | SUPPORT PLATE | 200 | 192 | 12.0 | 3.6 | 115.2 | SA516GR70N | 7478A01L05 | 747800-001 | GSB 1&2 |
| | 22 | 8 | SUPT. RING (SEE DETAIL) | 0 | 0 | 14.0 | 11.4 | 91.2 | SA516GR70N | 7478A03L04 | 747800-003 | |
| | 21 | 16 | SUPT. RING (SEE DETAIL) | 0 | 0 | 14.0 | 44.3 | 708.8 | SA516GR70N | 7478A03L04 | 747800-003 | |
| | 20 | 16 | SUPT. RING (SEE DETAIL) | 0 | 0 | 14.0 | 3.1 | 49.6 | SA516GR70N | 7478A03L04 | 747800-003 | |
| | 19 | 32 | FLANGE PLATE | 4531 | 100 | 22.0 | 78.3 | 2505.6 | SA516GR70N | 7478A25L02 | 747800-025 | CSB 3&4 |
| | 18 | 16 | WEB PLATE | 4531 | 236 | 22.0 | 184.7 | 2955.2 | SA516GR70N | 7478A25L02 | 747800-025 | CSB 3&4 |
| | 17 | 32 | SUPPORT PLATE | 168 | 150 | 12.0 | 2.4 | 76.8 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 3&4 |
| | 16 | 32 | RIB PLATE | 148 | 125 | 12.0 | 1.7 | 54.4 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 3&4 |
| | 15 | 32 | RIB PLATE | 165 | 125 | 12.0 | 1.9 | 60.8 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 3&4 |
| | 14 | 32 | FLANGE PLATE | 4153 | 100 | 22.0 | 71.7 | 2294.4 | SA516GR70N | 7478A25L02 | 747800-025 | CSB 2&5 |
| | 13 | 16 | WEB PLATE | 4153 | 236 | 22.0 | 169.3 | 2708.8 | SA516GR70N | 7478A25L02 | 747800-025 | CSB 2&5 |
| | 12 | 32 | SUPPORT PLATE | 204 | 150 | 12.0 | 2.9 | 92.8 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 2&5 |
| | 11 | 32 | RIB PLATE | 144 | 125 | 12.0 | 1.7 | 54.4 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 2&5 |
| | 10 | 32 | RIB PLATE | 194 | 125 | 12.0 | 2.3 | 73.6 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 2&5 |
| | 9 | 32 | FLANGE PLATE | 3145 | 100 | 22.0 | 54.3 | 1737.6 | SA516GR70N | 7478A25L02 | 747800-025 | CSB 1&6 |
| | 8 | 16 | WEB PLATE | 3145 | 156 | 22.0 | 84.7 | 1355.2 | SA516GR70N | 7478A25L02 | 747800-025 | CSB 1&6 |
| | 7 | 32 | RIB PLATE | 137 | 125 | 12.0 | 1.6 | 51.2 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 1&6 |
| | 6 | 32 | RIB PLATE | 249 | 125 | 12.0 | 2.9 | 92.8 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 1&6 |
| | 5 | 32 | SUPPORT PLATE | 272 | 150 | 12.0 | 3.8 | 121.6 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 1&6 |
| | 4 | 32 | LUG | 220 | 128 | 12.0 | 2.7 | 86.4 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 3&4 |
| | 3 | 32 | LUG | 220 | 124 | 12.0 | 2.6 | 83.2 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 2&5 |
| | 2 | 32 | LUG | 140 | 117 | 12.0 | 1.5 | 48.0 | SA516GR70N | 7478A01L05 | 747800-001 | CSB 1&6 |
| | 1 | 8 | SUPT. RNG 4700/4550 | 0 | 0 | 14.0 | 119.8 | 958.4 | SA516GR70N | 7478A03L04 | 747800-003 | IN SEGMENTS |

## LIST OF MATERIAL

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. No. DA-7478-02-009 SHEET 1 OF 2 (V-2151-101-A-035)

| JCP Project (JOB No. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE : | A8 |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( - ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | ( EQP ) |
| Review Date : | (06 FEB. 17 |

A : Approved without Comment; B: Approved/Reviewed
R : Resubmit incorporating comments; F: Not Subject to

Approval or review hereunder shall not be construed to relieve Supplier/Subcontractor of his responsibilities and liability under the contract.

| JGC DOC. NO. | ORIG. | PURCHASE ORDER No. | SERIAL | REV. |
|---|---|---|---|---|
| | V | 2151-101-A | 081 | 00 |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 4 | 19.12.'05 | 'AS BUILT' | KIRIT | JAP | SP |
| 3 | 24.10.'05 | REVISED AS MARKED (3) | KIRIT | JAP | SP |
| 2 | 09.05.'05 | JCP PROJECT BLOCK DELETED | KIRIT | JAP/BPP | VINCENT |
| 1 | 25.04.'05 | ISSUED FOR CONSTRUCTION | KIRIT | JAP/BPP | VINCENT |
| 0 | 14.03.'05 | ISSUED FOR APPROVAL & INTERNAL COMMENTS | Ravi / Raju | JAP/BPP | VINCENT |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليالي السعودية للصناعات الثقيلة المحدودة

| | |
|---|---|
| SCALE: | 1:25 |
| CLIENT: | JGC CORPORATION, JAPAN |
| ORDER: | 0-3515-P-2151-101-A |
| APPROVED FOR CONSTRUCTION | |
| BY..... | VINCENT |
| DATE..... | 25.04.'05 |

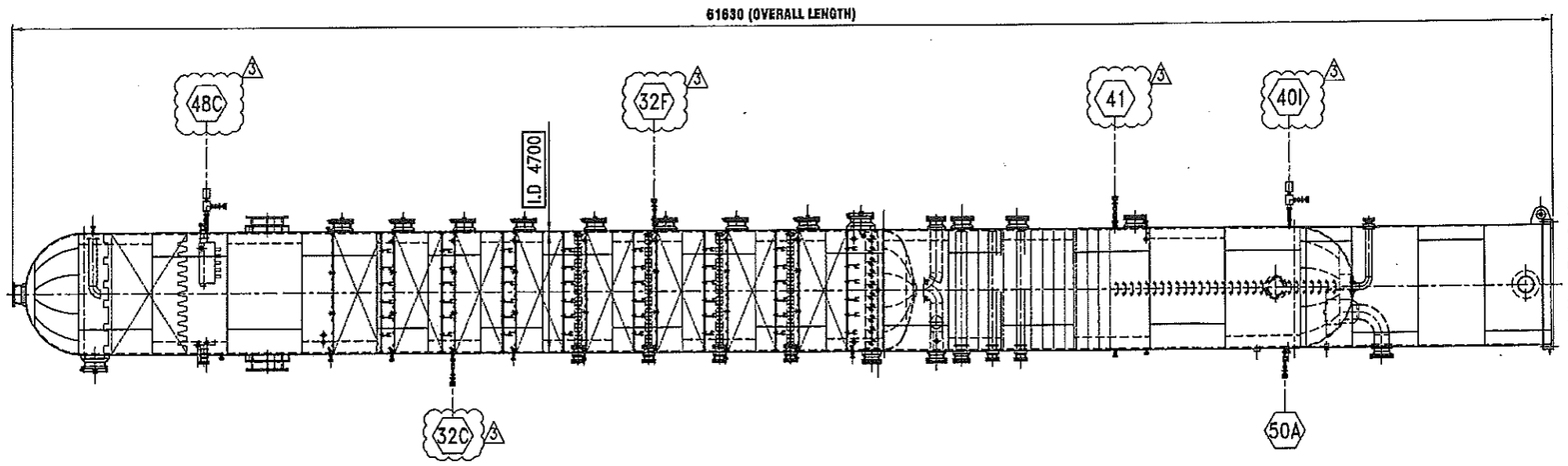
BILFAL HEAVY INDUSTRIES Ltd.
AL- JUBAIL, KINGDOM OF SAUDI ARABIA.
شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
SUPPORT DET. FOR CATALYST SUPP. GRIDS & HOLD-DOWN GRIDS

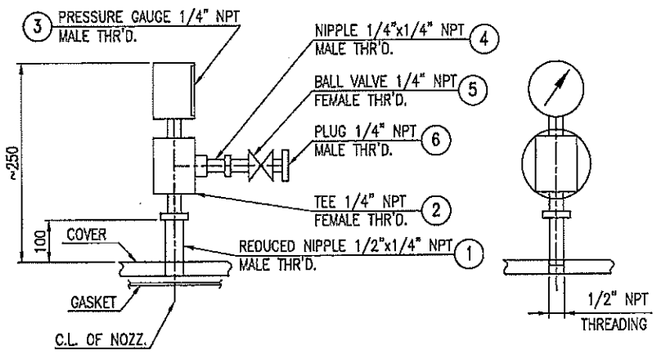
DRAWING NO. DA-7478-02-009 SHEET 2 OF 2 REV. 4

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليـاً أو جزئيـاً أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقامن شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND. LTD.

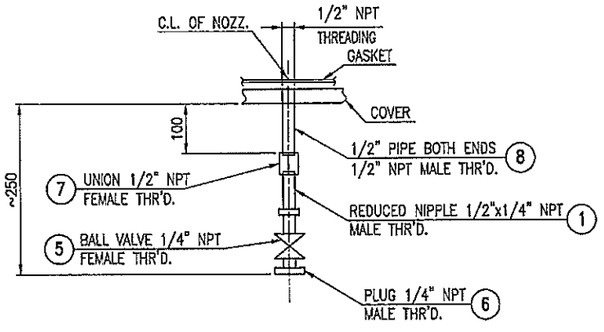
AS BUILT 17-FEB-06 FAX: 3494 : DOC#6280208B




NITROGEN PURGING ARRANGEMENT


3 PRESSURE GAUGE 1/4" NPT MALE THR'D.
NIPPLE 1/4"x1/4" NPT MALE THR'D. 4
BALL VALVE 1/4" NPT FEMALE THR'D. 5
PLUG 1/4" NPT MALE THR'D. 6
TEE 1/4" NPT FEMALE THR'D. 2
REDUCED NIPPLE 1/2"x1/4" NPT MALE THR'D. 1
COVER
GASKET
C.L. OF NOZZ.
~250
100
1/2" NPT THREADING

PRESSURE GAUGE & OTHER ACCESSORIES ON NOZ. CONN. (40I & 48C) 3


C.L. OF NOZZ.
1/2" NPT THREADING
GASKET
COVER
100
~250
1/2" PIPE BOTH ENDS 1/2" NPT MALE THR'D. 8
7 UNION 1/2" NPT FEMALE THR'D.
REDUCED NIPPLE 1/2"x1/4" NPT MALE THR'D. 1
5 BALL VALVE 1/4" NPT FEMALE THR'D.
PLUG 1/4" NPT MALE THR'D. 6

DRAIN & OTHER ACCESSORIES ON NOZ. CONN. (32F, 32C, 41 & 50A) 3

## NITROGEN PURGING ON DURING TRANSPORTATION:-

1. BEFORE STARTING PRESSURIZING NITROGEN, THE COLUMN SHALL BE COMPLETELY DRAINED AND DRIED WITH WARM AIR AND FREE OF GRIT AND LOOSE DEBRIS.
2. SEAL ALL OPENINGS WITH GASKETED BLIND FLANGES EMPLOYING FULL BOLTS INSTEAD OF ALTERNATIVE BOLTS.
3. PRESSURE WITH DRY NITROGEN TO 0.14 TO 0.7 Kg/Cm$^2$g (2 TO 10 Psig) AND DEPRESSURE TWICE. REPRESSURE TO 0.14 TO 0.7 Kg/Cm$^2$g (2 TO 10 Psig) WITH DRY NITROGEN.
4. STENCIL THE FOLLOWING IN SEVERAL LOCATION ALONG COLUMN AND THIS WARNING SHOULD BE CLEARLY VISIBLE FROM GROUND LEVEL & FROM BESIDE VESSEL.

**'CONTENTS UNDER NITROGEN PRESSURE. DO NOT OPEN WITHOUT OWNERS APPROVAL'**

5. THE FOLLOWING LAMINATED WARNING LABEL (IN A4 SIZE) 3 SHALL BE FIXED NEAR ALL MANWAYS.

!انتبار
WARNING!
مركبة مضغوطة بالنيتروجين
VESSEL FILLED WITH NITROGEN

TOTAL WT. = 0.0 Kgs.

| REF. | ITEM POS. | QTY FOR ONE FAM. | DESCRIPTION | LENGTH | WIDTH | THICK | WT. IN Kg. For ONE POS. | WT. IN Kg. For ONE FAM. | MAT'L | MAT'L CODE | MR. NO. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 8 | 4 | PI 1/2" NPS SCH80 (SEE DETAIL) | 0 | 0 | 0.0 | 0.2 | 0.2 | C.S. | 7478A32T01 | 747800-032 | - |
| 3 | 7 | 4 | UNION 1/2" NPT (FEMALE) | 0 | 0 | 0.0 | 0.0 | 0.0 | C.S. | 7478A31C07 | 747800-031 | - |
| 3 | 6 | 6 | PLUG 1/4" NPT (MALE) | 0 | 0 | 0.0 | 0.0 | 0.0 | C.S. | 7478A31C06 | 747800-031 | - |
| 3 | 5 | 6 | BALL VALVE 1/4" NPT (FEMALE) | 0 | 0 | 0.0 | 0.0 | 0.0 | C.S. | 7478A31C05 | 747800-031 | - |
| | 4 | 2 | NP.1/4"x1/4" NPTMALE | 0 | 0 | 0.0 | 0.0 | 0.0 | C.S. | 7478A31C04 | 747800-031 | - |
| | 3 | 2 | PG 1/4"NPT (MALE) | 0 | 0 | 0.0 | 0.0 | 0.0 | C.S. | 7478A31C03 | 747800-031 | - |
| | 2 | 2 | TEE 1/4"NPT (FEMALE) | 0 | 0 | 0.0 | 0.0 | 0.0 | C.S. | 7478A31C02 | 747800-031 | - |
| 3 | 1 | 6 | NP.1/2"x1/4" NPTMALE | 0 | 0 | 0.0 | 0.0 | 0.0 | C.S. | 7478A31C01 | 747800-031 | - |

LIST OF MATERIAL

| | |
|---|---|
| JCP Project (JOB No. : 0-3515-20) | |
| ISSUE PURPOSE : | AB |
| RESULT CODE : A, B, R, F | ( A ) |
| NEXT STATUS : FA, FI, FR, FC | ( – ) |
| RESUBMISSION DATE : | ( ) |
| RESPONSIBLE DEPT./PERSON : | (EQP) |
| Review Date : | '06 FEB. 17 |
| A : Approved without Comment; B: Approved/Reviewed<br>R : Resubmit incorporating comments; F: Not Subject to | |
| Approval or review hereunder shall not be construed to relieve Supplier/ Subcontractor of his responsibilities and liability under the contract. | |
| JGC DOC. NO. | ORIG. PURCHASE ORDER No. SERIAL REV.<br>V – 2151-101-A – 087 – 00 |

BILFAL HEAVY INDUSTRIES Ltd.
AS BUILT
CERTIFIED BY.....

| REV. | DATE | DESCRIPTION | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|
| 3 | 19.12.'05 | REVISED AS MARKED 3 & 'AS BUILT | KIRIT | HUSAIN | SP |
| 2 | 20.11.'05 | REVISED AS PER CLIENT COMMENTS AS MARKED 2 | KIRIT | HUSAIN | SP |
| 1 | 18.09.'05 | ISSUED FOR **CONSTRUCTION** | KIRIT | JAP | SP |
| 0 | 15.09.'05 | ISSUED FOR APPROVAL | KIRIT | JAP | SP |

**FORMERLY :** BELLELI SAUDI HEAVY INDUSTRIES LTD. بيلليلي السعودية للصناعات الثقيلة المحدودة

SCALE: 1 : 165
CLIENT: JGC CORPORATION, JAPAN
ORDER: 0-3515-P-2151-101-A
APPROVED FOR CONSTRUCTION BY..... SP DATE..16.09.'05

BILFAL HEAVY INDUSTRIES Ltd. AL-- JUBAIL, KINGDOM OF SAUDI ARABIA. شركة بلفال للصناعات الثقيلة الجبيل

JUBAIL CHEVRON PHILLIPS COMPANY
JCP PROJECT, AL JUBAIL, SAUDI ARABIA
ALKYLATOR (R-3201)
NITROGEN PURGING ARRANGEMENT

لايحق لأحد القيام بإنتاج هذا الرسم الهندسي كليا أو جزئيا أو إستخدامها لأي غرض إلابالحصول على موافقة خطية مسبقامن شركة بلفال للصناعات الثقيلة المحدودة.
THIS DRAWING IS NOT TO BE REPRODUCED IN WHOLE OR PART NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY BILFAL HEAVY IND.LTD.

DRAWING NO. DA-7478-02-021 REV. 3

FILE NAME:\DA7478\02021 1-1-AS BUILT

Drawing-nr: 1-106.226.365

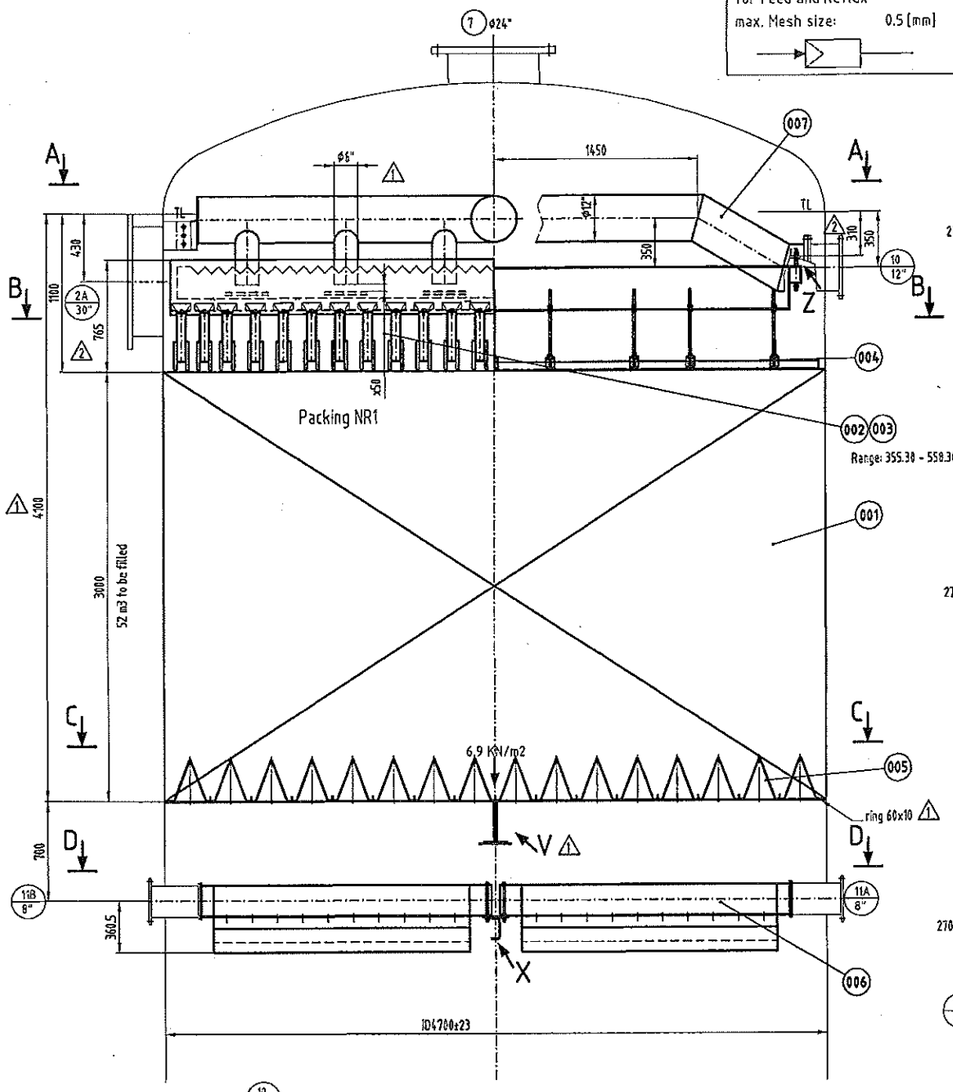
Recommended external filtration for Feed and Reflux
max. Mesh size: 0.5 [mm]

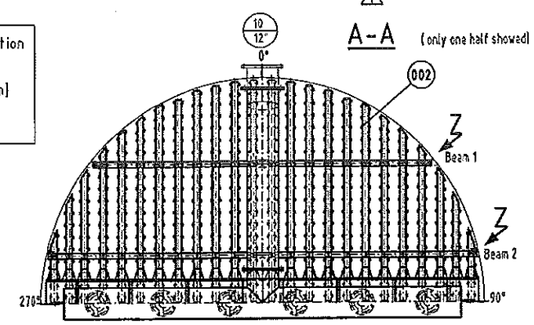
| item | qty. | spare | unit | drawing- or part-no. | description | remarks | material | wght. (kg) |
|---|---|---|---|---|---|---|---|---|
| 000 | 1 | - | pcs. | 1-106226365 | Internals Arrangement ID 4700 | R-320105 | | 1240 |
| 001 | 52 | 5 | M3 | | Ring NR 1 | | 1.4404 | 729 |
| 002 | 1 | - | pcs. | 1-106226366 | VER2 DISTRIBUTOR ID:4700 | Packing NR1 | 1.4301 | 1382 |
| 003 | 1 | - | pcs. | 2-106226366 | IV Predistributor ID:4700 | Packing NR1 | 1.4301 | 78 |
| 004 | 1 | - | pcs. | 1-106226360 | RPB Bedplate ID:4700 | Packing NR1 | 1.4301 | 178 |
| 005 | 1 | - | pcs. | 2-106226470 | GIS Support ID:4700 | Packing NR1 | 1.4301 | 884 |
| 006 | 1 | - | pcs. | 1-106226438 | Flash system ID:4700 | see B | 1.4301 | 368 |
| 007 | 1 | - | pcs. | 2-106226456 | INLET PIPE 10 ID:4700 | Packing NR1 | 1.4301 | 265 |

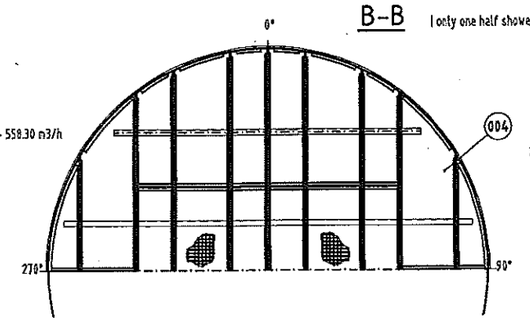
001 - 099: parts / 100 - 199: materials

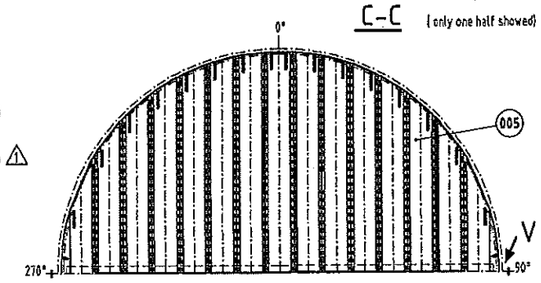
USED MATERIALS:
SA-240 TYPE 410S
SA-240 TYPE 304

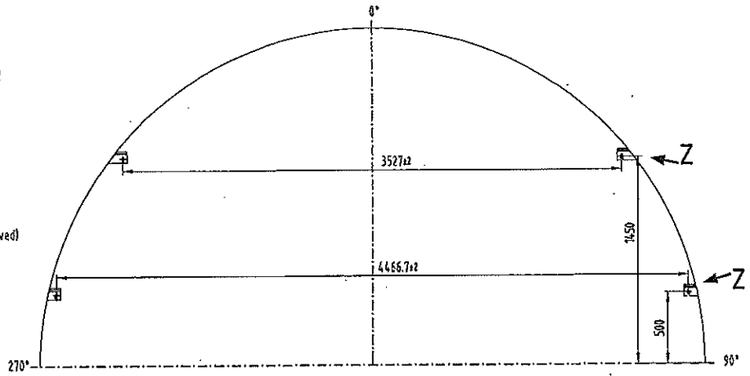
ATTACHMENT Brackets for distributer



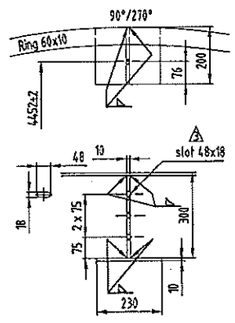



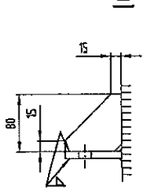



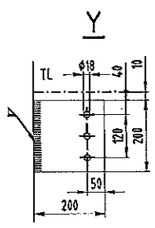

V
Brackets for GIS SUPPORT GRID




Z

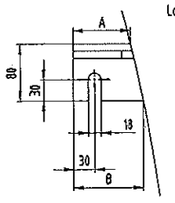



Y

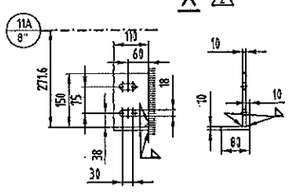



Load per bracket: 4500kg

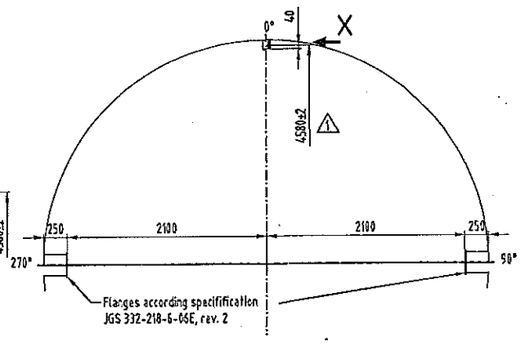
| Dimension | A | B |
|---|---|---|
| Beam 1 | 76 | 139 |
| Beam 2 | 82 | 99 |



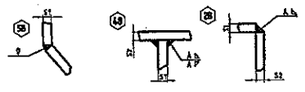

xx TO BE ADAPTED ON SITE

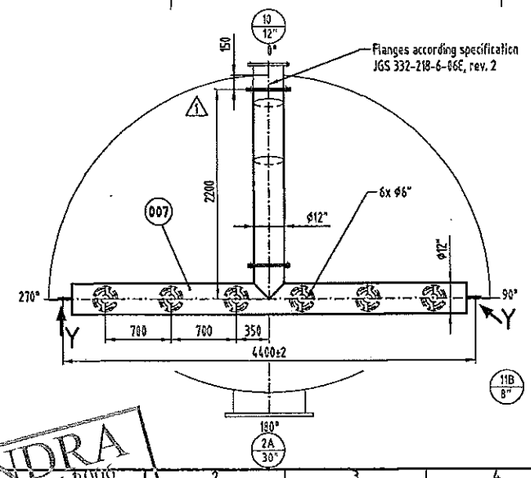


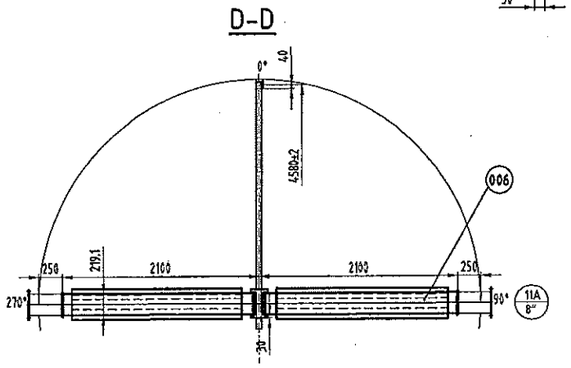

ATTACHMENT Brackets for FLASHING SYSTEM




WELDING: 0.7 x SHEET THICKNESS (S1)




JCP PROJECT (JOB NO : 0-3515-20)

| | |
|---|---|
| ISSUE PURPOSE: | As Built |
| RESULT CODE: A, B, R, F | ( A ) |
| NEXT STATUS: FA, F1, FC, AB | ( - ) |
| RESUBMISSION DATE: | ( - ) |
| RESPONSIBLE DEPT. /PERSON | (EGP/...) |
| REVIEW DATE: | ( 23. NOV. '06 ) |

A: Approved/Reviewed without Comment. B: Approved/Reviewed with Minor Comment. R: Revised incorporating comments. F: Not Subject to Review.

Approval or review hereunder shall not be construed to relieve Vendor/Manufacturer of his responsibilities and liability under the Contract.

| JGC DOC NO (By Vendor) | ENTR. | PURCHASE ORDER NO | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-101-A- | 001 | 00 |

SULZER CHEMTECH Pos. 001 - 007
KUNDE/CLIENT ring support, brackets, lugs,
MATERIAL OF ATTACHMENT SA516 Gr70

| rev. | revison remarks | issued by | date | checked | date | approved | date |
|---|---|---|---|---|---|---|---|
| 4 | As built | PALMEG_E | 21-11-2006 | KOPPACH_O | 30-10-2006 | KOPPACH_O | 30-10-2006 |
| 3 | Modification according customer requirements | COULM_P | 22-11-2005 | KOPPACH_O | 23-11-2006 | KOPPACH_O | 23-11-2006 |
| 2 | Modification according customer requirements | COULM_P | 27-09-2005 | KOPPACH_O | 09-10-2006 | KOPPACH_O | 09-10-2005 |
| 1 | Modification according customer requirements | COULM_P | 18-08-2005 | KOPPACH_O | 18-08-2005 | KOPPACH_O | 18-08-2005 |
| 0 | Original Issue | COULM_P | 23-11-2004 | KOPPACH_O | 17-02-2005 | KOPPACH_O | 17-02-2005 |

| | | | |
|---|---|---|---|
| part-nos: 106 226 365 200 | project: 2112460 STYCHEV-B | size: A-1 | scale: |
| col.-ID: 4700 [mm] | customer: JGC CORPORATION | customer-ref.: | JGC CORPORATION |
| col.: R-3201 | plant: JCP ETHYLENE & EB/SM PLANT | customer-dwgs: | |
| sects: 1-2 | area: AL JUBAIL, SAUDI ARABIA | AUTOCAD Rel.15 96 IUMS Tech Drawing | |

SULZER

Internals Arrangement ID: 4700

drawing-no.: 1-106.226.365 V1

state: FINAL

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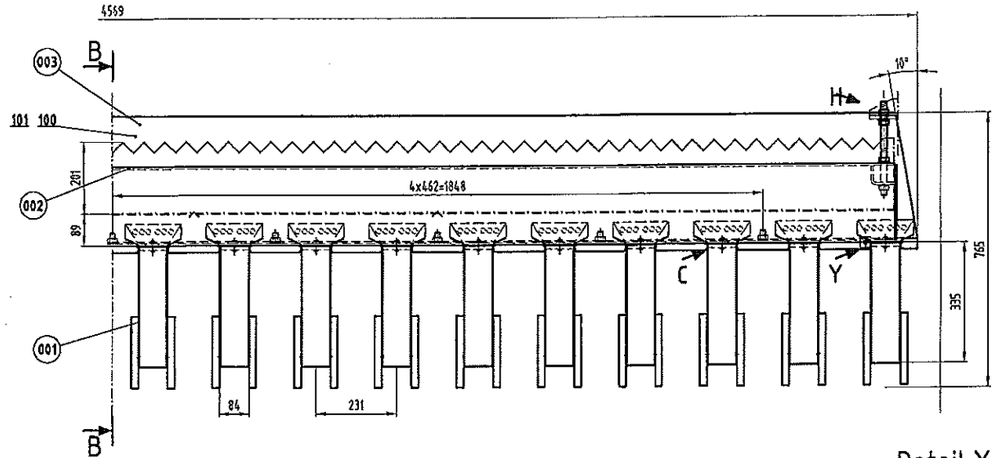
ENDRA 17-NOV-2006 AS BUILT

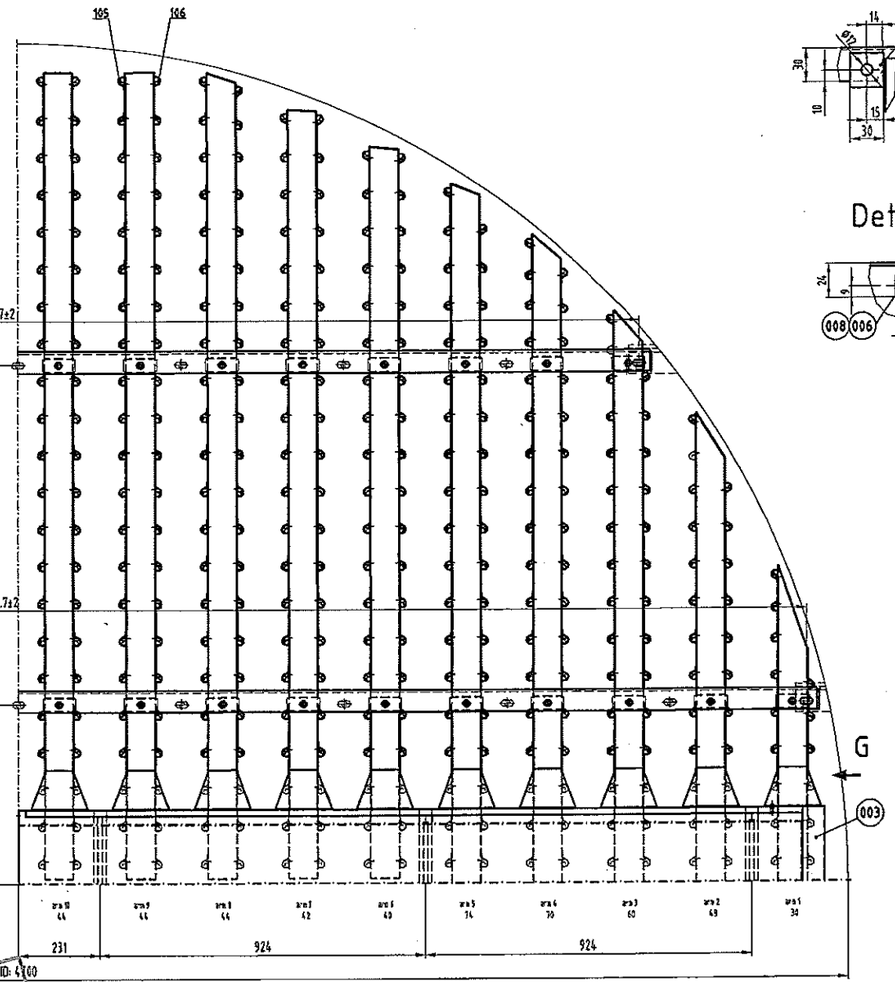
Drawing-nr.: 1-106.226.362

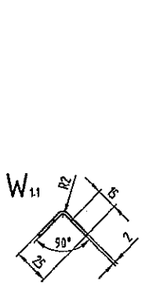
| item list | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| item | qty. | spare | unit | drawg.- or part-no. | description | remarks | material | wght. [kg] |
| 000 | 1 | - | pcs. | 1-106226362 | VER2 DISTRIBUTOR ID 4700 | | 1.4307 | 1292 |
| 001 | 1 | - | pcs. | | Set channel | Re 1-10 | | 1721 |
| 002 | 4 | - | pcs. | | Beam | | | |
| 003 | 2 | - | pcs. | | Maintroughsegments | | | |
| 004 | 8 | - | pcs. | | Threaded rod UNC-5/8" | L=550 | | |
| 005 | 32 | 1 | pcs. | 1941633171004 | Hex Nut UNC-5/8" | | A3/4A | 0.823 |
| 006 | 98 | 10 | pcs. | 1941745181193 | Hex bolt UNC-3/8"x7/8" | | A3-316/A4 | 0.823 |
| 007 | 36 | 6 | pcs. | 6434432 | Washer 10.5/20x2 | | A4/316 | 0.046 |
| 008 | 22 | 3 | pcs. | 1942196182813 | Hex Nut UNC-3/8" | | A3-316/A4 | 0.010 |
| 010 | 32 | 4 | pcs. | 6434425 | Washer 17/33x3 | | A4 | 0.201 |
| 011 | 2 | - | pcs. | | Connecting piece | | | |
| 012 | 48 | - | pcs. | 1941245183106 | Conducting element Ø x19 | | 1.4404/316L | 0.28 |
| 100 | 665 | - | KG | 6434411 | Sheet 2x1500x3000 | | 1.4301/304 | |
| 101 | 254 | - | KG | 6434537 | Sheet 2x1500x4000 | | 1.4301/304 | |
| 103 | 12 | - | pcs. | 1862244352204 | Support plate B=80 for bl.riv. | | | |
| 104 | 259 | - | KG | 6434838 | Sheet 6x1500x3000 | | 1.4301/304 | |
| 105 | 710 | - | pcs. | 6434069 | Curl tube right small L=200 | L=200 | 1.4404/316L | 0.106 |
| 106 | 710 | - | pcs. | 6434067 | Curl tube left small L=200 | L=200 | 1.4404/316L | 0.152 |
| 107 | 4 | - | pcs. | 1862225151103 | Threaded rod UNC-5/8"x1050 | | A4 | 1.8 |
| 108 | 36 | - | pcs. | 6434433 | Blind rivet nut UNC3/8" | | 1.4404/316L | 0.24 |

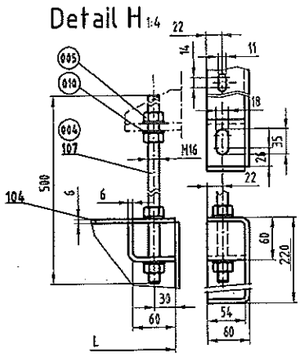
001 - 099: parts / 100 - 199: materials

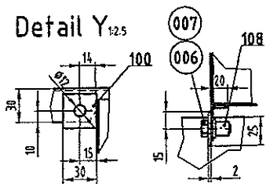
USED MATERIALS:
SA-240 TYPE 304
SA-240 TYPE 316L

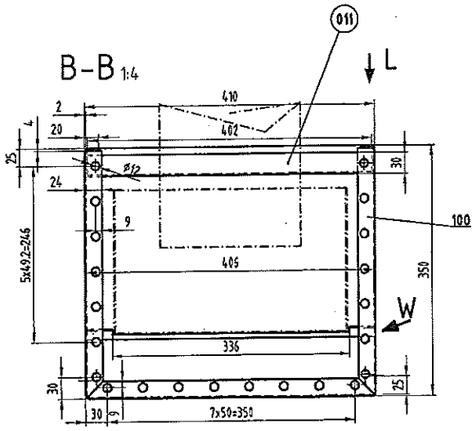


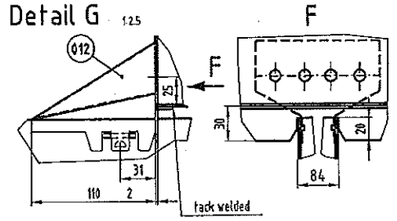



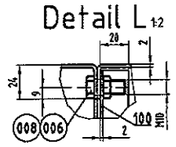



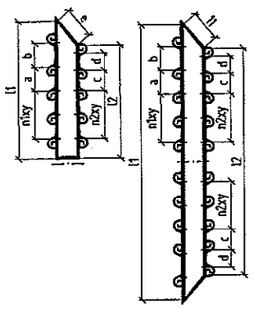



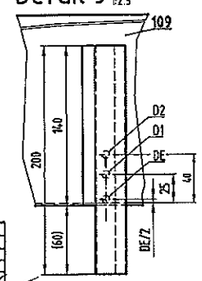



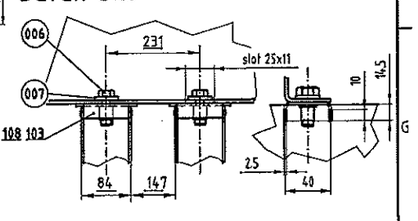



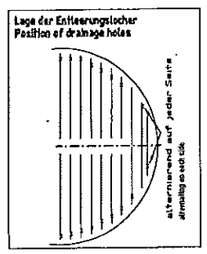

Dimensions of arm troughs

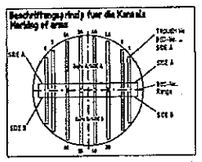
| no | l1 | l2 | n1xy | n2xy | a | b | c | d | e |
|---|---|---|---|---|---|---|---|---|---|
| 13 | 2251 | 2251 | 13 | 18 | 104 | 94 | 104 | 94 | 80 |
| 9 | 2251 | 2251 | 18 | 18 | 104 | 94 | 104 | 94 | 80 |
| 8 | 2249 | 2223 | 18 | 18 | 103 | 93 | 93 | 89 | 84.1 |
| 7 | 2141 | 2143 | 17 | 17 | 104 | 94 | 102 | 92 | 80.1 |
| 6 | 2043 | 2035 | 16 | 15 | 104 | 94 | 100 | 90 | 80.4 |
| 5 | 3903 | 3814 | 15 | 14 | 104 | 94 | 104 | 94 | 86.2 |
| 4 | 3620 | 3455 | 14 | 13 | 84 | 74 | 94 | 84 | 104.4 |
| 3 | 3192 | 3014 | 12 | 10 | 81 | 71 | 104 | 94 | 119.7 |
| 2 | 2618 | 2366 | 9 | 7 | 94 | 83 | 104 | 94 | 149.3 |
| 1 | 1356 | 1295 | 5 | 2 | 86 | 76 | 98 | 90 | 243.5 |

y: 104




| JCP PROJECT (JOB NO. : 0-3515-20) | | | |
|---|---|---|---|
| ISSUE PURPOSE: | As built | | |
| RESULT CODE A, B, R, F | ( A ) | | |
| NEXT STATUS: FA, FI, FE, AS | ( - ) | | |
| RESUBMISSION DATE | ( - ) | | |
| RESPONSIBLE DEPT./PERSON | ( EQUIP/Kurt Kühn ) | | |
| REVIEW DATE | ( 17/Nov/'06 ) | | |
| A Approved/Reviewed w/out Comment B Approved/Reviewed with Minor Comment C Resubmit incorporating comments D Not Subject to Review | | | |
| Approval or review by vendor shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract | | | |
| JGC DOC NO. (By Vendor) | DRG | PURCHASE ORDER NO. | SERIAL | REV. |
| | V- | 2152-101-A- | 002 | 00 |

GENERAL NOTES
All parts shall pass through man holes: 730 ID
All components are marked by SULZER.
The assembled part is checked after manufact.

surface treatments:
☐ without ☐ welding joints only
☒ pickled/neutralized ☒ degreased

ship data files:
NC225362

manufacturing of holes: punched

**Distributor Data**

| | |
|---|---|
| ID, column | 4700 [mm] |
| number of drip points | 1420 [-] |
| distribution density | 80 [l/m²] |
| DN inlet hube | 150 [mm] |
| number of inlet tubes | 6 [-] |
| Pre Distributor | 106.226.364 |
| arm troughs orifices: | |
| D3 8 [mm] | OE: 7.2 [mm] |
| D2 6.6 [mm] | |
| main trough orifices: | > 15 [mm] |

| | | loads above orifice [m3/h] | |
|---|---|---|---|
| | flow [m3/h] | spec. flow [m3/m2] | arm troughs | main trough |
| min | 355.25 | 20.5 | 65 | 78 |
| max | 558.25 | 32.2 | 204 | 245 |
| max% | 5975 | | | |

distributor quality:
rel. standard deviation max. 6% at operating point: 355.25 [m3/h]

| rev. | revision remarks | issued by | date | checked | date | approved | date |
|---|---|---|---|---|---|---|---|
| B | As built | FALUMEO_E | 27-10-2006 | HOFFACH_O | 24-10-2006 | HOFFACH_O | 26-10-2006 |
| 2 | Modification according customer requirements | COURON_P | 22-09-2005 | HOFFACH_O | 19-10-2005 | HOFFACH_O | 19-10-2005 |
| 1 | Modification according customer requirements | COURON_P | 08-09-2005 | HOFFACH_O | 18-08-2005 | HOFFACH_O | 18-08-2005 |
| 0 | Original issue | LEUPP_S | 18-02-2005 | SCHUMANN_G | 24-02-2005 | HOFFACH_O | 25-02-2005 |

| | | | |
|---|---|---|---|
| part-no.: 106 226 362 200 | project: 2102460 STYOHEV-B | size: A-1 | scale: |
| col.-ID: 4700 [mm] | customer: JGC CORPORATION | customer-ref.: | JGC CORPORATION |
| col.: R-3201 | plant: JCP ETHYLENE & EB/SM PLANT | customer-dwgs: | |
| | area: AL JUBAIL, SAUDI ARABIA | AUTOCAD Rel.15.1 for S.M.S. Tech Drawing | |

SULZER

VER2 DISTRIBUTOR ID: 4700
Load: 355.25 to 558.25 [m3/h]

drawing-no.: 2
1-106.226.362 V1

state: FINAL

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INDRA
17-NOV-2006
AS BUILT

Drawing-no: 1-106.226.369

| item | qty. | spare | unit | drawing- or part-no. | description | remarks | material | wght. kg |
|---|---|---|---|---|---|---|---|---|
| 000 | 1 | - | pcs. | 1-106.226.369 | RPB Bedlimiter ID 4700 | R-3201/1 | SA36/ | 178 |
| 001 | 24 | - | pcs. | | Segments | | | |
| 002 | 32 | - | pcs. | | Bolt with nut UNC-5/8" | L=500 | | |
| 004-005 | 32 | - | pcs. | | Suspension | | | |
| 006 | 128 | 13 | pcs. | 1841333719184 | Hex Nut UNC-5/8" | | A194/8A | 0.033 |
| 008 | 32 | 3 | pcs. | 1841745918497 | Hex bolt UNC-3/8"x7/8" | | A3-36/8/8A | 0.033 |
| 009 | 32 | 3 | pcs. | 1852855813263 | Hex Nut UNC-3/8" | | A3-36/8/8A | 0.012 |
| 100 | 145 | - | KG | 6953115 | Sheet 2x1500x3000 | | 1.4301/304 | |
| 101 | 17 | - | M2 | 6980456 | Wire grid 2x1200x2000 W20 | | 1.4301/304 | 66 |
| 102 | 32 | - | pcs. | 1841333719184 | Hex Nut UNC-5/8" | | A2/8/8A | 0.033 |
| 103 | 16 | - | pcs. | 1859229515184 | Threaded rod UNC-5/8"x1000 | | A4 | 6.8 |
| 104 | 18 | - | KG | 6955812 | Sheet 3x1500x3000 | | 1.4301/304 | |

001 - 099: parts / 100 - 199: materials

USED MATERIALS: ⚠
SA-240 TYPE 304
SA-240 TYPE 316L

A-A

B-B

POS.004

POS.005

C-C

V

W

X

Y

Z

| JCP PROJECT (JOB NO. : 0-3515-20) | | | | |
|---|---|---|---|---|
| ISSUE PURPOSE: As Built | | | | |
| RESULT CODE A,B,D,F | ( A ) | | | |
| NEXT STATUS FA,FF,FC,AB | ( - ) | | | |
| RESUBMISSION DATE: | ( - ) | | | |
| RESPONSIBLE DEPT./PERSON: | ( EQ / [illegible] ) | | | |
| REVIEW DATE: | ( 16-NOV-'06 ) | | | |
| A Approved/Approved as Noted Comment | B Approved/Approved with Minor Comment | | | |
| C Revise & resubmit incorporating comments | D Not Subject to Review | | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract. | | | | |
| JCP DOC NO. (by Vendor) | DELIV. | PURCHASE ORDER NO. | REVISION | REV. |
| | V- | 2152-101-A- | 003 | 00 |

GENERAL NOTES
All parts shall pass through man holes: 739 ID
All components are marked by SULZER.
The assembled part is checked after manufact.
surface treatments:
☒ without ☐ welding joints only
☐ pickled/neutralized ☐ degreased
manufacturing tolerances according: DIN

| rev. | revision remarks | issued by | date | checked | date | approved | date |
|---|---|---|---|---|---|---|---|
| 3 | Modification according manufacturing requirements | LEUPPI_S | 27-01-2005 | HOFFACH_O | 30-10-2004 | HOFFACH_O | 30-10-2005 |
| 2 | Modification according customer requirements | COULON_P | 22-09-2005 | HOFFACH_O | 09-10-2005 | HOFFACH_O | 09-10-2005 |
| 1 | Modification according customer requirements | COULON_P | 08-08-2005 | HOFFACH_O | 18-08-2005 | HOFFACH_O | 18-08-2005 |
| 0 | Original issue | GAERTNER_R | 19-02-2005 | LEUPPI_S | 22-12-2005 | HOFFACH_O | 25-12-2005 |

| | | | |
|---|---|---|---|
| part-no.: 106 226 363 200 | project: 2112460 STYCHEV-B | size: A-1 | scale: |
| col.-I.D.: 4700 [mm] | customer: JSC CORPORATION | customer-ref.: | JSC CORPORATION |
| col.: R-3201 | plant: KP ETHYLENE & EB/SM PLANT | customer-dwg.: | |
| sect.: 1 | area: AL JUBAIL, SAUDI ARABIA | AUTOCAD Rel.15.66s LMS Tech Drawing | |

SULZER

RPB Bedlimiter ID: 4700

drawing-no.: 3
1-106.226.363 V1

status: FINAL

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INDRA
17-NOV-2006
AS BUILT

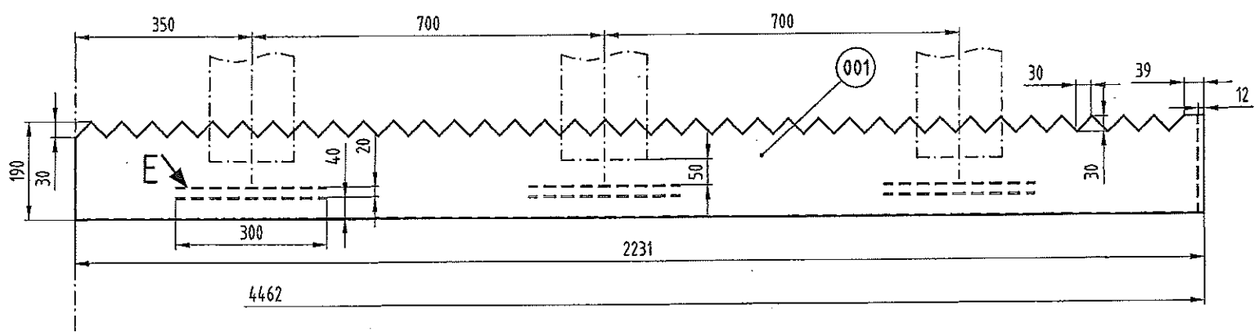
Drawing-n#: 2-106.226.364

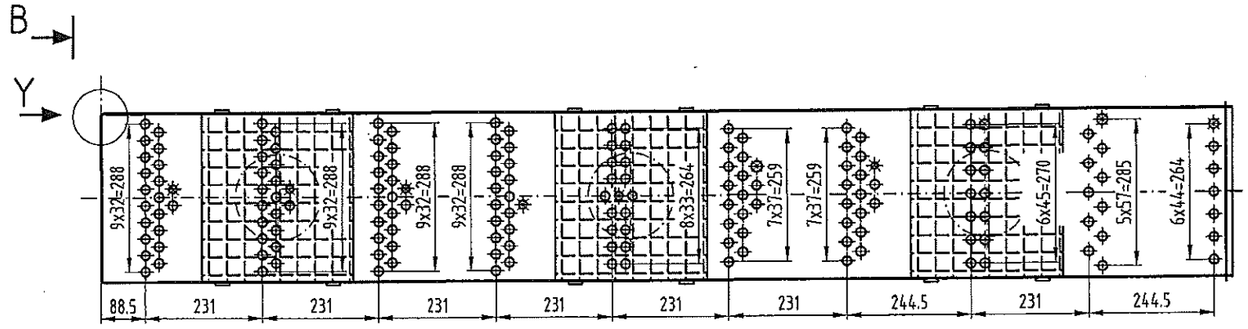
| item list | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| item | qty. | spare | unit | drawing- or part-no. | description | remarks | material | wght. (kg) |
| 000 | 1 | - | pcs. | 2-106.226.364 | IV Predistributor ID:4700 | R-3201/1 | 1.4301 | 70 |
| 001 | 2 | - | pcs. | | Troughpart | | | |
| 002 | 4 | 2 | pcs. | 1061749181.07 | Hex bolt UNC-3/8"x7/8" | | A2-70/B/8A | 0.023 |
| 003 | 4 | 2 | pcs. | 1062169800.62 | Hex Nut UNC-3/8" | | A2-70/B/8A | 0.012 |
| 004 | 2 | - | pcs. | | connecting plate | | | |
| 100 | 70 | 4 | KG | 6160811 | Sheet 2x1500x3000 | | 1.4301/304 | |

001 - 099: parts / 100 - 199: materials

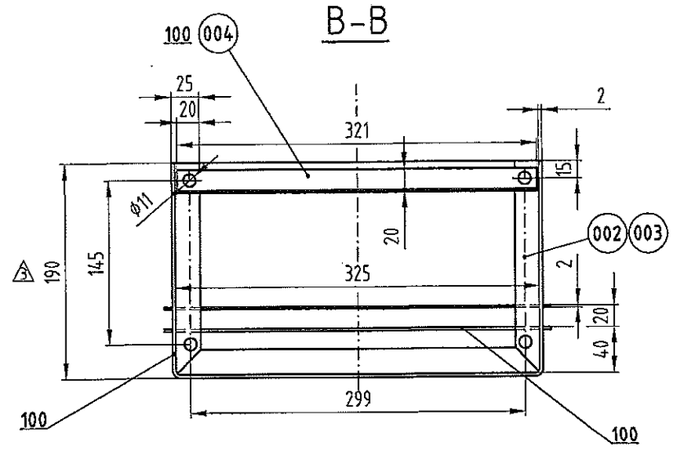
USED MATERIALS: ⚠
SA-240 TYPE 304

## A-A

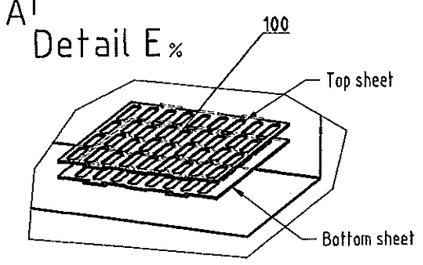



## B-B




## Detail E ⅝

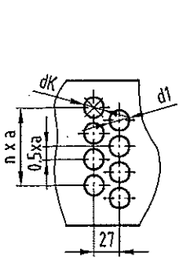



## Pre Distributor Data

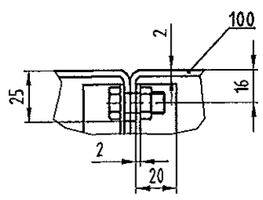
DN inlettube 150 [mm]
Number of Inlet Pipes: 6 [-]
Belongs to Distributor: 1-106.226.362

| | Flow [m3/h] | level above orifice [mm] |
|---|---|---|
| min. | 355.30 | 169 |
| max. | 558.30 | overflow over notches |

| no. | d | dK | nxa |
|---|---|---|---|
| 1/20 | 18 | 18.6 | 6x44 |
| 2/19 | 18 | 20.8 | 5x37 |
| 3/18 | 18 | 19.4 | 6x45 |
| 4/17 | 18 | 13 | 7x37 |
| 5/16 | 18 | 21.8 | 7x37 |
| 6/15 | 18 | 16.8 | 8x33 |
| 7/14 | 18 | 16.4 | 9x32 |
| 8/13 | 18 | 15.8 | 9x32 |
| 9/12 | 18 | 15.8 | 9x32 |
| 10/11 | 18 | 15.8 | 9x32 |




## Y




| JCP PROJECT (JOB NO. : 0-3515-20) | | | | |
|---|---|---|---|---|
| ISSUE PURPOSE: | As Built | | | |
| RESULT CODE: A, B, R, F | ( A ) | | | |
| NEXT STATUS: FA, FI, FC, AB | ( - ) | | | |
| RESUBMISSION DATE: | ( - ) | | | |
| RESPONSIBLE DEPT. /PERSON: | (EGI/Lot Lotz) | | | |
| REVIEW DATE: | (15-Nov-06) | | | |
| A Approved/Reviewed without Comment B Resubmit incorporating comments | | B Approved/Reviewed with minor Comment Fi Not Subject to Review | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract. | | | | |
| JGC DOC NO (By Vendor) | ORIG. V- | PURCHASE ORDER NO. 2152-101-A- | SERIAL 004 | REV. 00 |

**GENERAL NOTES**

All parts shall pass through man holes: 730 I.D
All components are marked by SULZER.
The assembled part is checked after manufact.

surface treatment:
☐ without ☐ welding joints only
☐ pickled/neutralized ☒ degreased

shop data files:
NC226364.dwg
manufacturing of holes: punched
manufacturing tolerances according: DIN

| rev. | revison remarks | issued by | date | checked | date | approved | date |
|---|---|---|---|---|---|---|---|
| 3 | As built | HOPPACH_O | 03-03-2005 | HOPPACH_O | 30-10-2006 | NUESSLE_A | 30-10-2006 |
| 2 | Modification according customer requirements | COULON_P | 22-09-2005 | HOPPACH_O | 09-10-2005 | HOPPACH_O | 09-10-2005 |
| 1 | Modification according customer requirements | COULON_P | 08-08-2005 | HOPPACH_O | 18-08-2005 | HOPPACH_O | 18-08-2005 |
| 0 | Original issue | PINARDI_S | 22-02-2005 | LEUPPI_S | 22-02-2005 | HOPPACH_O | 25-02-2005 |

part-no.: 106.226.364.200 | project: 2112460 STYCHEV-B | size: A-2 | scale:
col.-I.D.: 4700 [mm] | customer: JGC CORPORATION | customer-ref.: JGC CORPORATION
col.: R-3201 | plant: JCP ETHYLENE & EB/SM PLANT | customer-dwg.:
sect.: 1 | area: AL JUBAIL, SAUDI ARABIA | AUTOCAD Rel.15.06s (LMS Tech) Drawing

**SULZER**

IV Predistributor ID: 4700

drawing-no.: 4 2-106.226.364 1/1

state: FINAL

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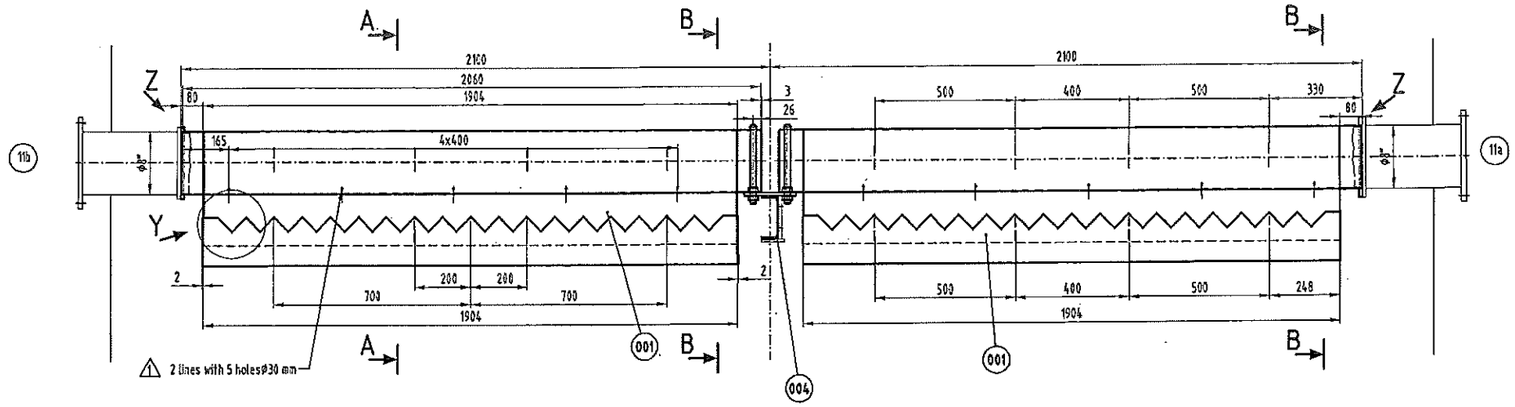
INDRA 17-NOV-2006 1 AS BUILT

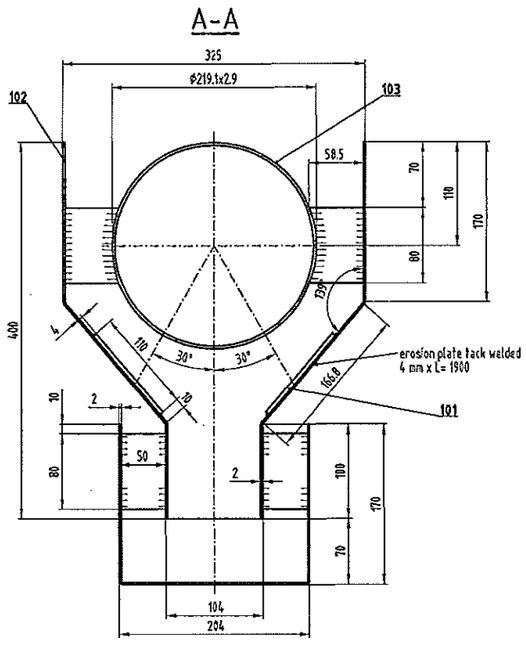
Drawing-n°: 1-106.226.439

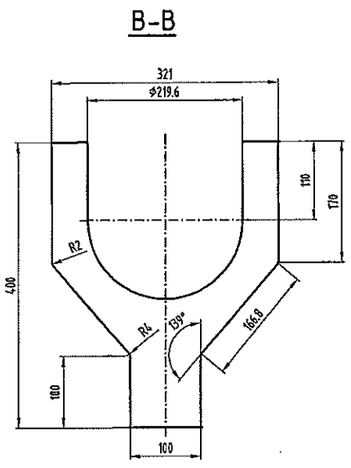
| Item | Qty. | Spare | Unit | Drawing- or part-no. | Description | Remarks | Material | Wgt. (kg) |
|---|---|---|---|---|---|---|---|---|
| 000 | 1 | - | pcs. | 1-106.226.439 | Flash system ID-4700 | R 3201/2 | 1.4307 | 368 |
| 001 | 2 | - | pcs. | | Distributing box | | | |
| 003 | 8 | 1 | pcs. | 6603425 | Washer 17/30x3 | | A4 | 0.014 |
| 004 | 1 | - | pcs. | | Beam | L=4540 | | |
| 005 | 4 | 2 | pcs. | 1842165 93930 | Hex bolt UNC-5/8"x2 1/2" | | A2-70/A4 | 0.172 |
| 006 | 2 | 2 | pcs. | 1842583 55912 | U-Bolt DN200 UNC-3/4" | | 1.4301/304 | 1.3 |
| 008 | 4 | 2 | pcs. | 1841825 13183 | Hex Nut UNC-5/8" | | A4-70/A4/A2 | 0.033 |
| 009 | 8 | 2 | pcs. | 1841852 13983 | Hex bolt UNC-3/4"x2 1/2" | | A2-70/A4 | 0.128 |
| 010 | 16 | 2 | pcs. | 1841854 31984 | Hex Nut UNC-3/4" | | A2-70/A4 | 0.065 |
| 100 | 18 | - | KG | 6661333 | Sheet 12x1500x3000 | | 1.4301/304 | |
| 101 | 25 | - | KG | 6661923 | Sheet 4x1500x3000 | | 1.4435/316L | |
| 102 | 88 | - | KG | 6662111 | Sheet 2x1500x3000 | | 1.4301/304 | |
| 103 | 42 | - | M | 6663778 | Pipe welded 219,1x2,9 | | 1.4404/316L | 56 |
| 104 | 61 | - | KG | 6663853 | Sheet 6x1500x3000 | | 1.4301/304 | |

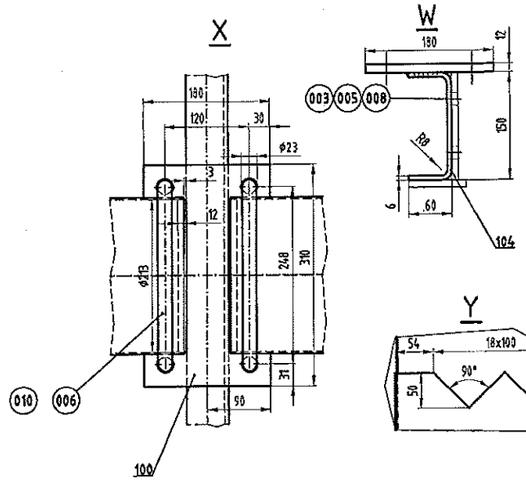
001 – 099: parts / 100 – 199: materials

USED MATERIALS: ⚠
SA-240 TYPE 304
SA-240 TYPE 316L



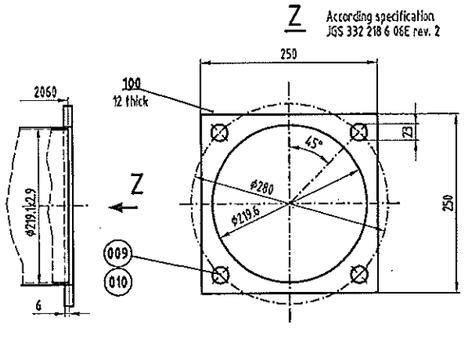



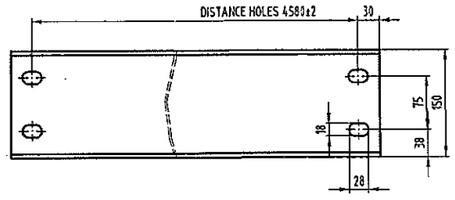



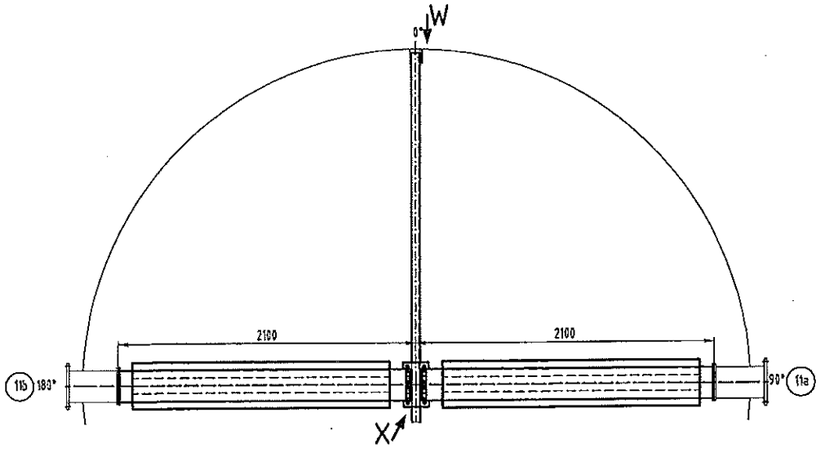







DATA per nozzle

Liquid range: 39925 kg/h
Liquid density: 651 kg/m3
Vapor range: 4666 kg/h
Vapor density: 4.13 kg/m3
Flash fraction 10.5%
dp max. = 529 mbar

NOTE
NO GASKET USING

| JGC PROJECT (JOB NO. : 0-3515-20) | | | | |
|---|---|---|---|---|
| ISSUE PURPOSE: | As Built | | | |
| RESULT CODE(A,B,R,F) | ( A ) | | | |
| NEXT STATUS(FA,FI,FC,AS) | ( - ) | | | |
| RESUBMISSION DATE | ( - ) | | | |
| RESPONSIBLE DEPT./PERSON | ( FSP/Lwt ) | | | |
| REVIEW DATE | ( 15-Nov.-06 ) | | | |
| A: Approved/reviewed without Comment B: Resubmit incorporating comments | | B: Approved/reviewed with minor Comment R: Not Subject to Review | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Fabricator of his responsibilities and liability under the Contract. | | | | |
| JGC DOC NO (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
| | V- | 2152-101-A- | 005 | 00 |

| GENERAL NOTES | |
|---|---|
| All parts shall pass through man holes: 730 LD | |
| All components are marked by SULZER. | |
| The assembled part is checked after manufact. | |
| surface treatments | |
| ☐ without | ☐ welding joints only |
| ☒ pickled/neutralized | ☐ degreased |
| manufacturing of holes: laser | |
| manufacturing tolerances according: DIN | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4 | As built | PALUMBO_R | 27-10-2006 | HOPPACK_O | 26-10-2006 | HOPPACK_O | 26-10-2006 | |
| 3 | Modification according customer requirements | COULON_P | 23-11-2005 | HOPPACK_O | 23-11-2005 | HOPPACK_O | 23-11-2005 | |
| 2 | Modification according customer requirements | COULON_P | 22-09-2005 | HOPPACK_O | 09-10-2005 | HOPPACK_O | 09-10-2005 | |
| 1 | Modification according customer requirements | COULON_P | 08-08-2005 | HOPPACK_O | 18-08-2005 | HOPPACK_O | 18-08-2005 | |
| 0 | Original issue | GAERNER_R | 15-02-2005 | LEUPPI_S | 23-02-2005 | HOPPACK_O | 25-02-2005 | |
| rev. | revision remarks | issued by | date | checked | date | approved | date | |

| | | | |
|---|---|---|---|
| part-nos: 106 226 439 200 | project: 2112460 STYCHEV-B | size: A-1 | scale: |
| col.-I.D.: 4700 (mm) | customer: JGC CORPORATION | customer-ref.: JGC CORPORATION | |
| col.: R 3201 | plant: JGC ETHYLENE & EB/SM PLANT | customer-dwgs: | |
| sect.: 2 | area: AL AJBAIL, SAUDI ARABIA | AUTOCAD Rel.15 (6) (LHS Tech) Drawing | |

SULZER

Flash system ID: 4700

drawing-no.: 5
1-106.226.439 V1

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status: FINAL

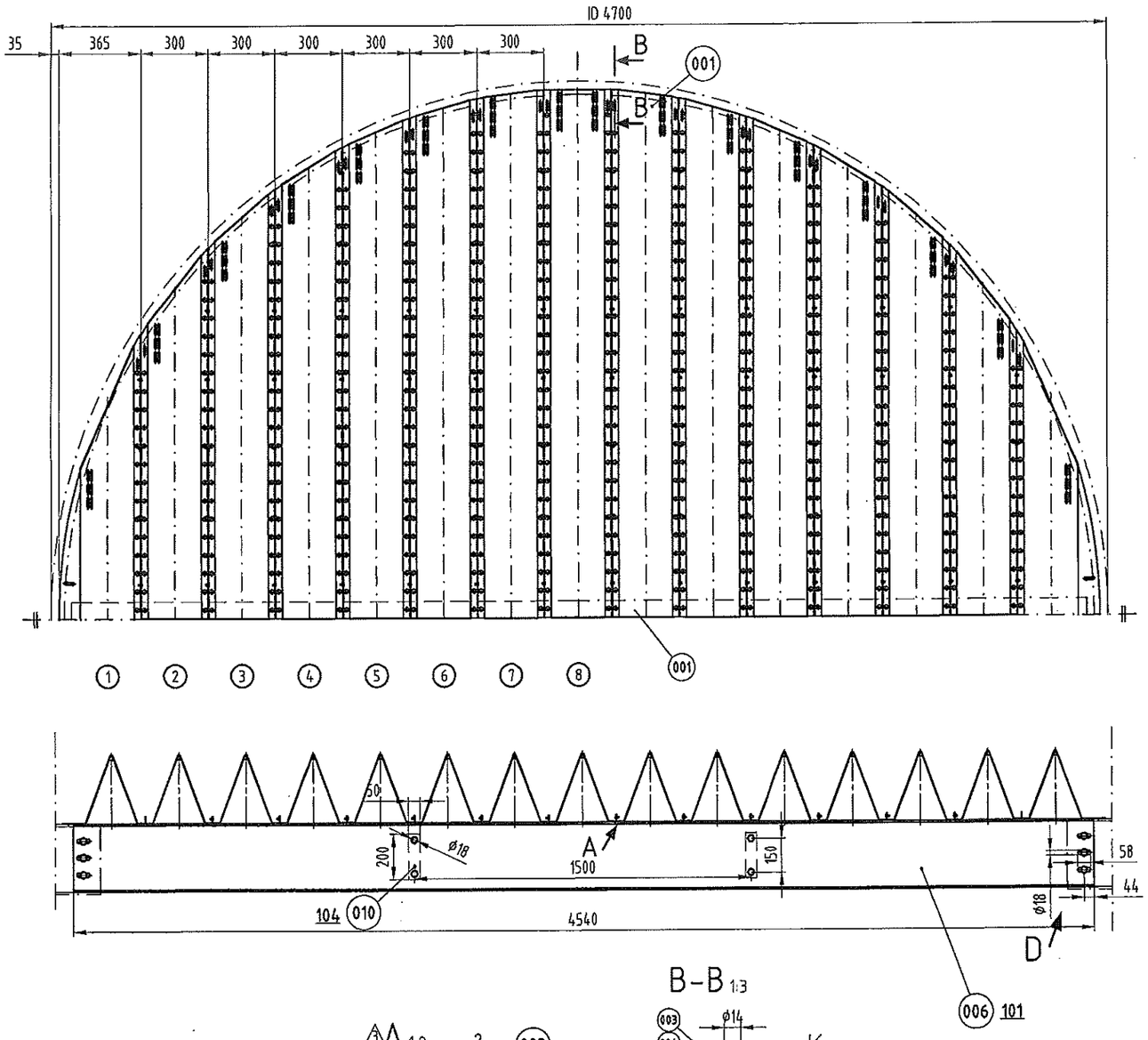
INDRA 17-NOV-2006 AS BUILT

Drawing-n#: 2-106.226.470

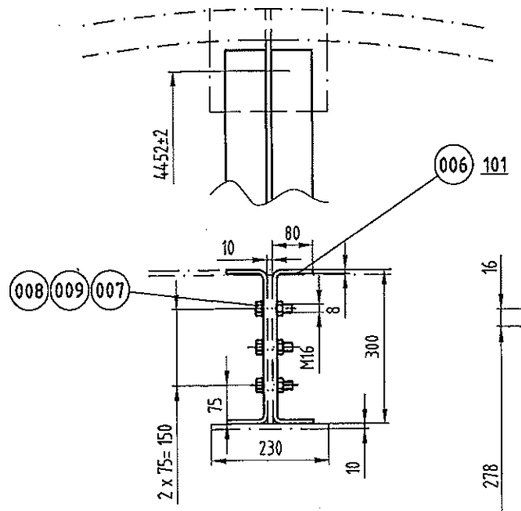
| item | qty. | spare | unit | drawing- or part-no. | description | remarks | material | wght. [kg] |
|---|---|---|---|---|---|---|---|---|
| 000 | 1 | - | pcs. | 2-106.226.470 | GIS Support ID:4700 | | 1.4301/ | 865 |
| 001 | 28 | - | pcs. | | Segments | 1 - 8 | | |
| 002 | 168 | 17 | pcs. | 1062165980023 | Hex bolt UNC-3/8"x1 3/4" | | A2-70/B/BA | 0.033 |
| 003 | 226 | 23 | pcs. | 1061633732106 | Hex Nut UNC-3/8" | | 1.4301/304 | 0.012 |
| 004 | 69 | 6 | pcs. | 6160440 | Washer 10.5/30x2.5 | | A4/316 | 0.012 |
| 005 | 69 | 6 | pcs. | | Universalclamp | | | |
| 006 | 2 | - | pcs. | | C-Profil | 300x80x8x4540 | | |
| 007 | 10 | 2 | pcs. | 1062165980030 | Hex bolt UNC-5/8"x2 1/2" | | A2-70/B/BA | 0.111 |
| 008 | 10 | 2 | pcs. | 1351323115109 | Hex Nut UNC-5/8" | | A4-70/B9/BMA | 0.033 |
| 009 | 20 | 2 | pcs. | 6160425 | Washer 17/30x3 | | A4 | 0.011 |
| 010 | 2 | - | pcs. | 1062180001004 | Distance sheet | 200x50x10 | | |
| 011 | 336 | 34 | pcs. | 1062232735069 | Washer 10.5/20x2 | | A2/V2A | 0.004 |
| 100 | 797 | - | KG | 6160811 | Sheet 2x1500x3000 | | 1.4301/304 | |
| 101 | 150 | - | KG | 6160691 | Sheet 8x1500x3000 | | 1.4301/304 | |
| 102 | 65 | - | pcs. | 3-105.216.144 | Univ. Clamp one way 5-19 | | 1.4404/316L | 0.125 |
| 103 | 66 | - | pcs. | 1062165980024 | Hex bolt UNC-3/8"x2" | | A2-70/B/BA | 0.041 |
| 104 | 2 | - | KG | 6160692 | Sheet 10x1500x3000 | | 1.4301/304 | |

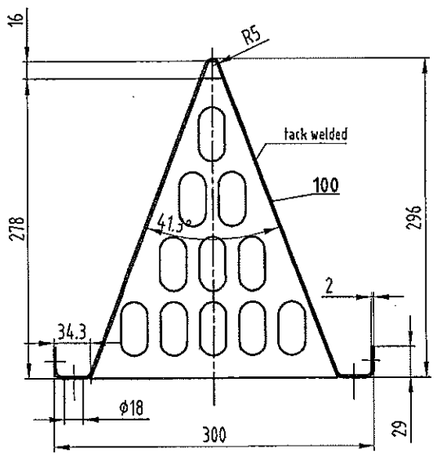
001 - 099: parts / 100 - 199: materials

USED MATERIALS:
SA-240 TYPE 304
SA-240 TYPE 316L



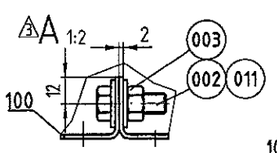

Detail D (1:8)

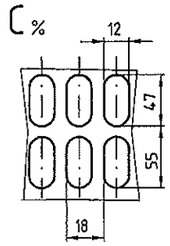


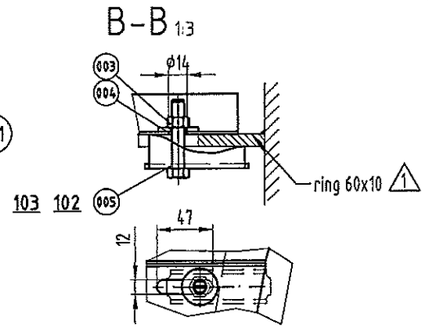










JCP PROJECT ( JOB NO. : 0-3515-20)

| | |
|---|---|
| ISSUE PURPOSE: | As Built |
| RESULT CODE: A, B, R, F | ( A ) |
| NEXT STATUS: FA, FI, FC, AB | ( - ) |
| RESUBMISSION DATE: | ( - ) |
| RESPONSIBLE DEPT. /PERSON: | ( ESP/Lee ) |
| REVIEW DATE: | ( 15. Nov. '06 ) |

A: Approved/Reviewed without Comment B: Approved/Reviewed with minor Comment
R: Resubmit incorporating comments FI: Not Subject to Review

Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract.

| JGC DOC NO (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-101-A- | 006 | 00 |

GENERAL NOTES
All parts shall pass through man holes: 730 I.D.
All components are marked by SULZER.
The assembled part is checked after manufact.

surface treatment:
[X] without [ ] welding joints only
[ ] pickled/neutralized [ ] degreased

shop data files:
NC1062264701

state: FINAL

| rev. | revison remarks | issued by | date | checked | date | approved | date |
|---|---|---|---|---|---|---|---|
| 4 | As built | PALUMBO_E | 27-10-2006 | HOPPACH_O | 30-10-2006 | HOPPACH_O | 30-10-2006 |
| 3 | Modification according project review | GAEHLER_R | 08-12-2005 | HOPPACH_O | 27-01-2006 | HOPPACH_O | 27-01-2006 |
| 2 | Modification according customer requirements | COULON_P | 22-09-2005 | HOPPACH_O | 09-10-2005 | HOPPACH_O | 09-10-2005 |
| 1 | Modification according customer requirements | COULON_P | 08-08-2005 | HOPPACH_O | 18-08-2005 | HOPPACH_O | 18-08-2005 |
| 0 | Original issue | MEIER_A | 17-02-2005 | LEUPPI_S | 22-02-2005 | HOPPACH_O | 25-02-2005 |

| | | | | |
|---|---|---|---|---|
| part-no.: 106.226.470.200 | project: 2112460 STYCHEV-B | size: A-2 | scale: | |
| col.-I.D.: 4700 (mm) | customer: JGC CORPORATION | customer-ref.: JGC CORPORATION | | |
| col.: R-3201 | plant: JCP ETHYLENE & EB/SM PLANT | customer-dwg.: | | |
| | area: AL JUBAIL, SAUDI ARABIA | AUTOCAD Rel.15.06s [LMS Tech] Drawing | | |
| SULZER | GIS Support ID: 4700<br>Load: 6.9 [KN/m2] | drawing-no.: 6<br>2-106.226.470 1/1 | | |

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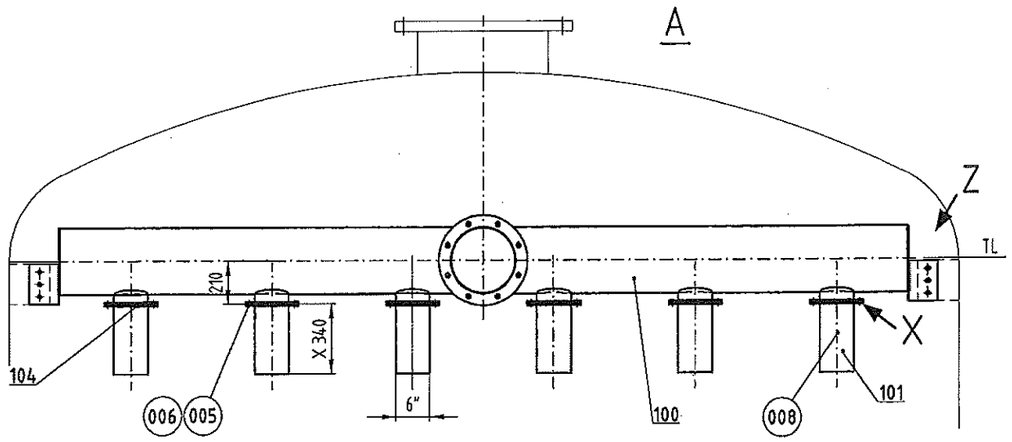
INDRA
17-NOV-2006
AS BUILT

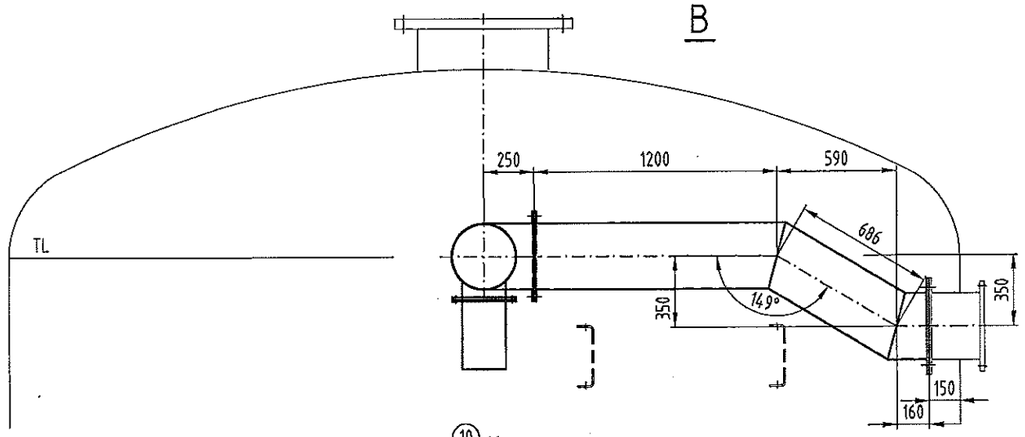
Drawing-n#: 2-106.226.494

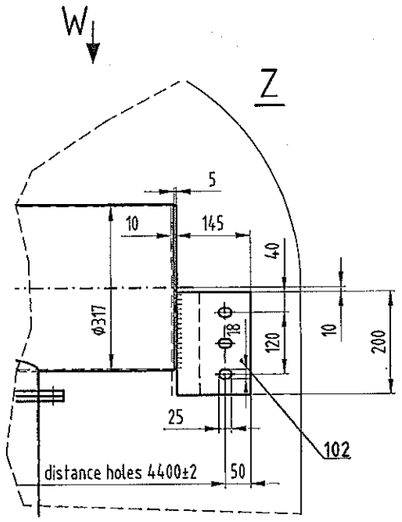
| item list | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| item | qty. | spare | unit | drawing- or part-no. | description | remarks | material | wght. [kg] |
| 000 | 1 | - | pcs. | 2-106.226.494 | INLET PIPE 10 ID:4700 | R-3201/1 | 1.4301V | 285 |
| 001 | 1 | - | pcs. | | Tube with flange | 12" | | |
| 002 | 1 | - | pcs. | | T-shape pipe | 12" | | |
| 003 | 15 | 2 | pcs. | 106185293108 | Hex bolt UNC-3/4"x2 1/2" | | A2-70/8/8A | 0.219 |
| 004 | 15 | 2 | pcs. | 106185430104 | Hex Nut UNC-3/4" | | A2-70/8/8A | 0.065 |
| 005 | 54 | 6 | pcs. | 106216980030 | Hex bolt UNC-5/8"x2 1/2" | | A2-70/8/8A | 0.117 |
| 006 | 54 | 6 | pcs. | 106163370104 | Hex Nut UNC-5/8" | | A2/8/8A | 0.033 |
| 007 | 12 | 2 | pcs. | 6160425 | Washer 17/30x3 | | A4 | 0.011 |
| 008 | 6 | - | pcs. | | Tube with flange | 6" | | |
| 100 | 66 | - | M | 6169778 | Pipe welded 323.9x3.2 | | 1.4404/316L | 26 |
| 101 | 32 | - | M | 6169775 | Pipe welded 168.3x2.6 | | 1.4404/316L | 11 |
| 102 | 40 | 10 | KG | 6160692 | Sheet 10x1500x3000 | | 1.4301/304 | |
| 104 | 12 | - | pcs. | 106217218032 | Flange DN150x10 | | 1.4307/304L | 2.4 |

001 - 099: parts / 100 - 199: materials

USED MATERIALS: ⚠
SA-240 TYPE 304
SA-240 TYPE 316L

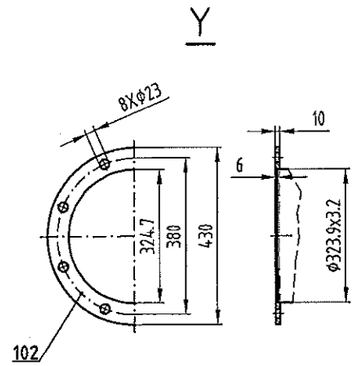


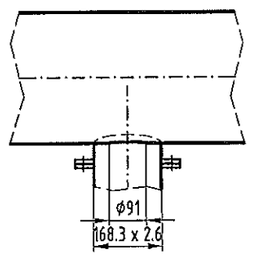



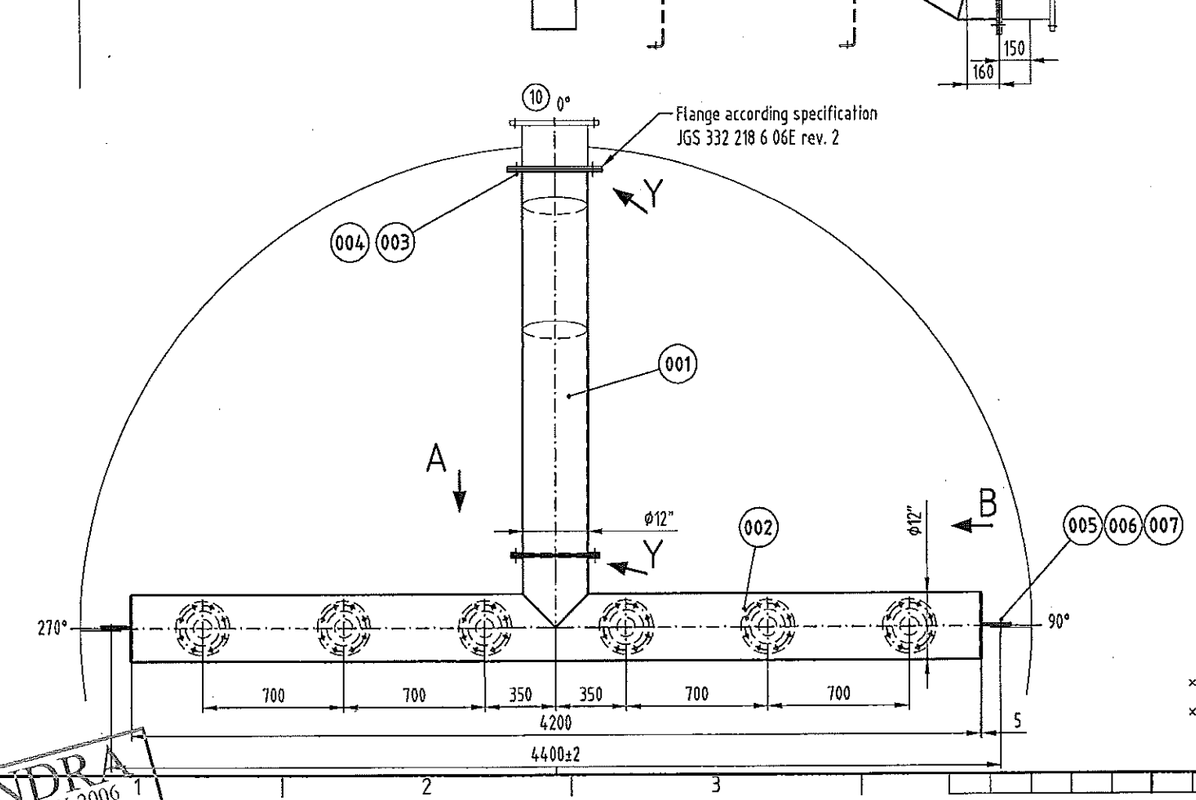










NOTA

NO GASKETS USING

| GENERAL NOTES |
|---|
| All parts shall pass through man holes: 730 I.D<br>All components are marked by SULZER.<br>The assembled part is checked after manufact. |
| surface treatment:<br>☐ without ☐ welding joints only<br>☒ pickled/neutralized ☐ degreased |
| manufacturing tolerances according: DIN |

× Bei Montage anpassen
× To be adjusted during assembly

JCP PROJECT (JOB NO. : 0-3515-20)

| | |
|---|---|
| ISSUE PURPOSE: | As Built |
| RESULT CODE: A, B, R, F | ( A ) |
| NEXT STATUS: FA, FI, FC, AB | ( - ) |
| RESUBMISSION DATE: | ( - ) |
| RESPONSIBLE DEPT. /PERSON: | ( EQP/CS ) |
| REVIEW DATE: | ( 15 Nov. 06 ) |

A: Approved/Reviewed without Comment B: Approved/Reviewed with minor Comment
B: Resubmit incorporating comments F: Not Subject to Review

Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract.

| JGC DOC NO (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-101-A- | 007 | 00 |

| rev. | revison remarks | issued by | date | checked | date | approved | date |
|---|---|---|---|---|---|---|---|
| 3 | As built | PALUMBO_E | 27-10-2006 | HOPPACH_O | 30-10-2006 | HOPPACH_O | 30-10-2006 |
| 2 | Modification according customer requirements | COULON_P | 22-09-2005 | HOPPACH_O | 09-10-2005 | HOPPACH_O | 09-10-2005 |
| 1 | Modification according customer requirements | COULON_P | 08-08-2005 | HOPPACH_O | 18-08-2005 | HOPPACH_O | 18-08-2005 |
| 0 | Original issue | MEIER_A | 18-02-2005 | LEUPPI_S | 22-02-2005 | HOPPACH_O | 25-02-2005 |

| | | | |
|---|---|---|---|
| part-no.: 106.226.494.200 | project: 2112460 STYCHEV-B | size: A-2 | scale: |
| col.-I.D.: 4700 [mm] | customer: JGC CORPORATION | customer-ref.: | JGC CORPORATION |
| col.: R-3201 | plant: JCP ETHYLENE & EB/SM PLANT | customer-dwg.: | |
| sect.: 1 | area: AL JUBAIL, SAUDI ARABIA | AUTOCAD Rel.15.06s [LMS Tech] Drawing | |

SULZER

INLET PIPE 10 ID: 4700

drawing-no.: 7
2-106.226.494 1/1

state: FINAL

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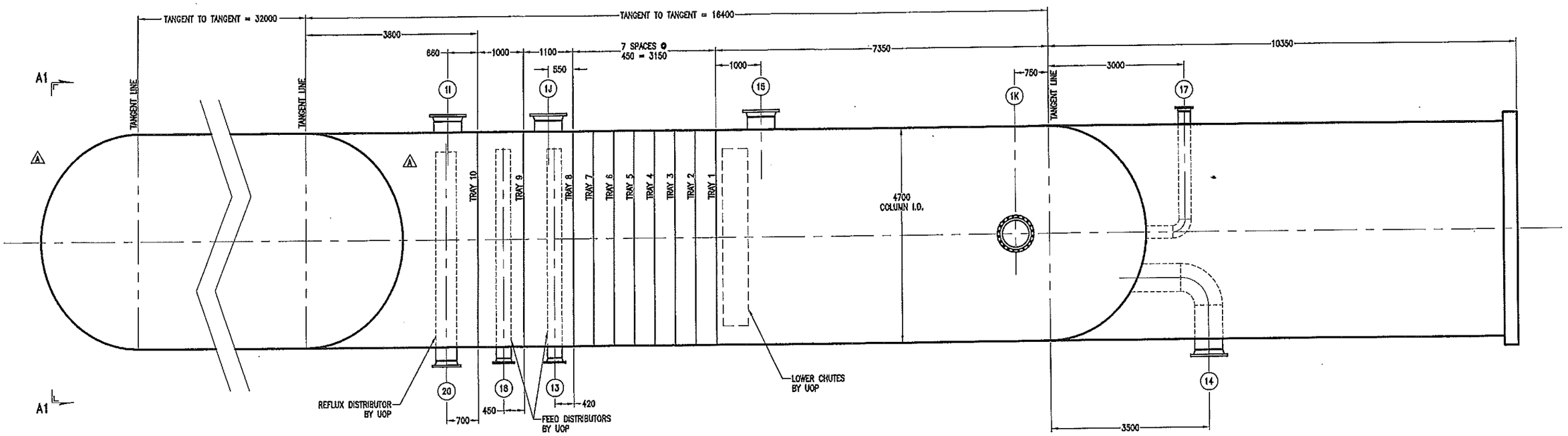
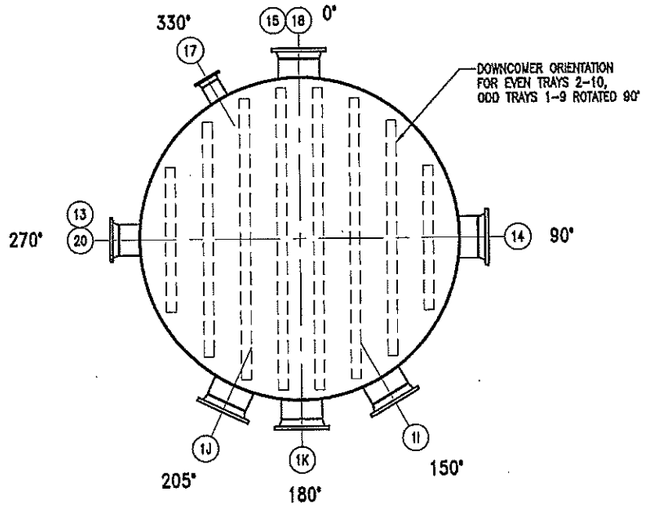
INDRA 17-NOV-2006 AS BUILT



## GENERAL NOTES FOR NEW COLUMNS

1. TRAYS ARE NUMBERED FROM THE BOTTOM OF THE COLUMN.
2. ALL TRAY PARTS ARE DESIGNED TO PASS THROUGH A 600 mm MINIMUM ID MANHOLE.
3. ALL TOWER ATTACHMENTS (INCLUDING TRAY SUPPORT RINGS) ARE TO BE INSTALLED LEVEL, WITHIN 3.5mm HIGH POINT TO LOW POINT.
4. ALL TRAY SPACING DIMENSIONS ARE GIVEN FROM THE TOP OF THE SUPPORT RING TO THE TOP OF THE SUPPORT RING BELOW.
5. ALL SUPPORT RINGS AND BRACKETS ARE TO BE SEAL WELDED TO THE SHELL. RINGS ARE TO BE SEAL WELDED ON TOP AND BOTTOM TO THE SHELL.
6. ALL TOP SURFACES OF SUPPORT RINGS AND SUPPORT BRACKETS ARE TO BE FREE FROM SLAG, SCALE, AND DEBRIS.
7. TOLERANCES ON THE DIMENSIONS OF THE COLUMN INTERNALS, UNLESS OTHERWISE NOTED, ARE ±3mm ON LINEAR DIMENSIONS AND ±1/6° ON ANGULAR DIMENSIONS.
8. TRAYS ARE DESIGNED TO ACCOMMODATE AN INSIDE TOWER DIAMETER OF 99.5% TO 100.5% OF THE THE NOMINAL.
9. DIMENSIONS ARE GIVEN IN MILLIMETERS AND PIPE SIZES ARE GIVEN IN INCHES, UNLESS OTHERWISE NOTED.
10. TOWER ATTACHMENTS FOR TRAYS 1-10, AND DISTRIBUTORS WILL BE DESIGNED BY UOP, BUT SUPPLIED AND INSTALLED BY OTHERS.




NOZZLE AND TRAY ORIENTATION

VIEW A1-A1

SCALE: 1X

| NOZZLE SCHEDULE | | |
|---|---|---|
| NOZZLE | SIZE | DESCRIPTION |
| 11 | 24" | MANHOLE |
| 1J | 24" | MANHOLE |
| 1K | 24" | MANHOLE |
| 13 | 12" | FEED |
| 14 | 24" | TO REBOILER |
| 15 | 24" | REBOILER RETURN |
| 17 | 10" | LIQUID BOTTOM OUTLET |
| 18 | 12" | FEED |
| 20 | 18" | REFLUX |
| | | |

B AS BUILT
DEREK SHIH DATE 11/4/05

A UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| JCP PROJECT (JOB NO. : 0-3515-20) | | | | |
|---|---|---|---|---|
| ISSUE PURPOSE: | AB | | | |
| RESULT CODE:A,B,R,F | A | | | |
| NEXT STATUS:FA,FI,FC,AB | - | | | |
| RESUBMISSION DATE: | - | | | |
| RESPONSIBLE DEPT./PERSON: | EQP / [illegible] | | | |
| REVIEW DATE: | 8 DEC. '05 | | | |
| A Approved/Reviewed without Comment; B Approved/Reviewed with minor Comment; R Resubmit Incorporating comments; F Not Subject to Review | | | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract | | | | |
| JCC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
| | V- | 2152-201-A- | 001 | 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX/XX | NOZZLE |
| △X | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYATOR
P.O. NO. : 0-3515-P-2152-201-A

TITLE: TOWER ATTACHMENTS AND NOZZLE LOCATIONS

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

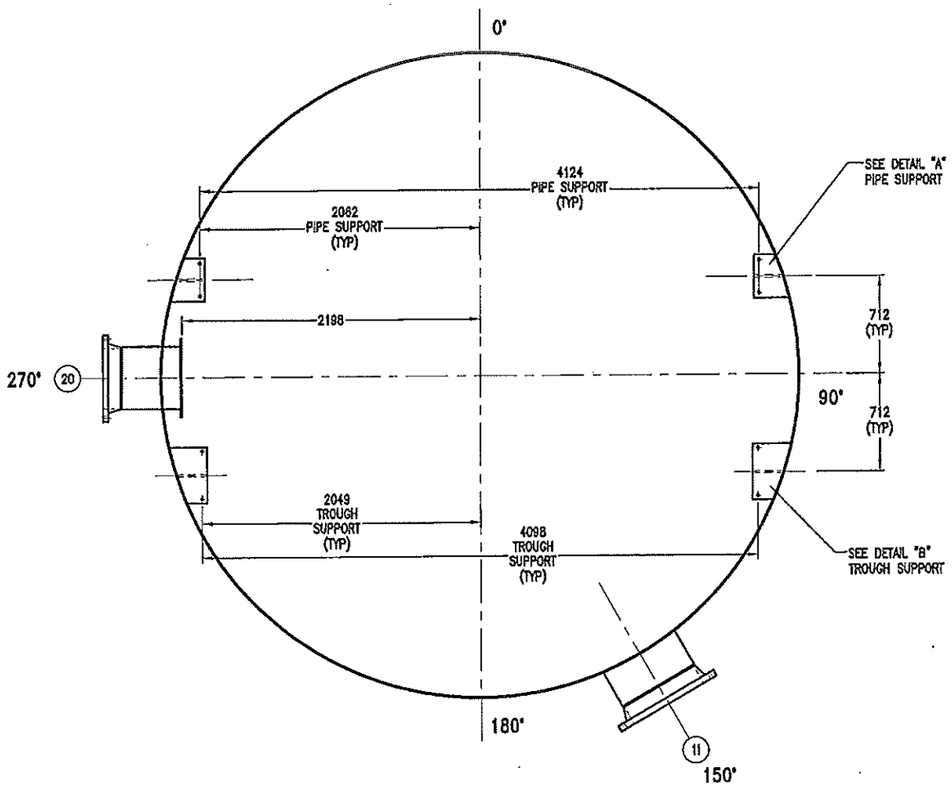
UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-2000
FAX (716)879-7219

"Centered on Quality"

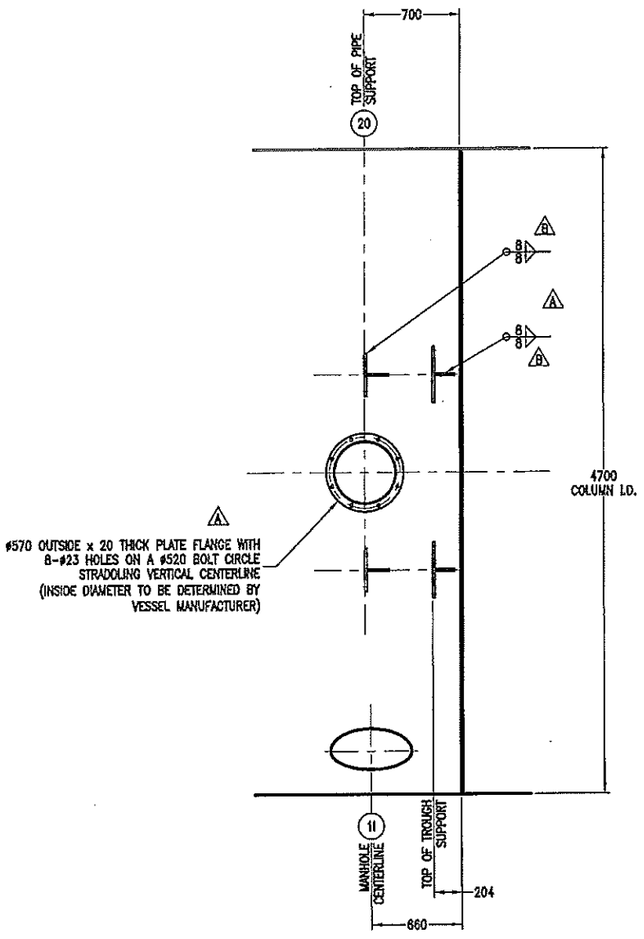
| | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| B | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/28/05 | PJW | DHS 4/05 | JA 4/05 |
| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |

BY PJW 2/22/05
CHECKED DHS 3/05
REVIEWED TCH 3/05
APPROVED JRU 3/18/05
SCALE 1:40
NO. SHTS 4
SHEET 1
LATEST REV. LETTER B
DWG NO. D-2286172

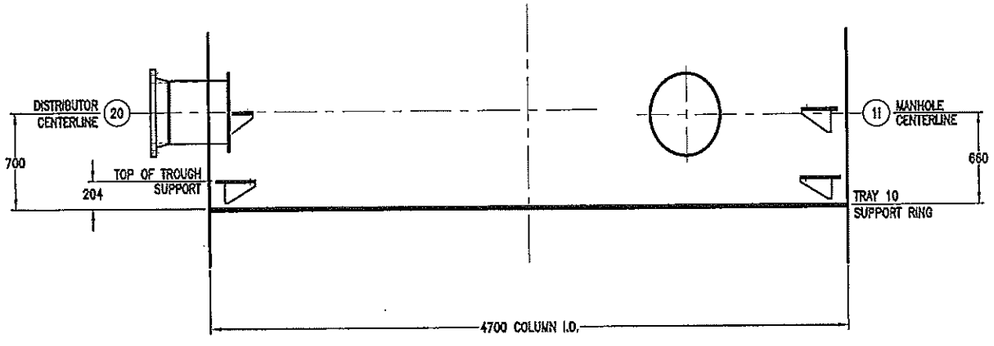
INTERNATIONAL 08-DEC-2005 AS BUILT




PLAN VIEW OF REFLUX DISTRIBUTOR ATTACHMENTS
ABOVE SUPPORT RING 10

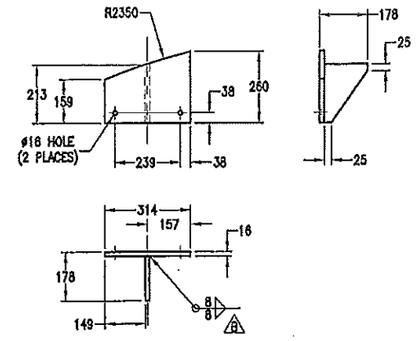



SECTION VIEW OF REFLUX DISTRIBUTOR ATTACHMENTS



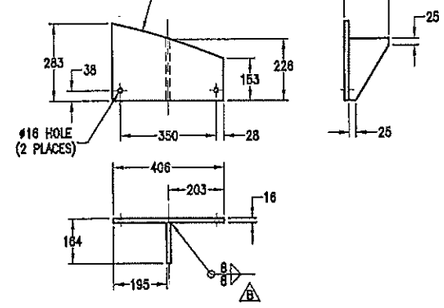

ELEVATION VIEW OF REFLUX DISTRIBUTOR ATTACHMENTS

⚠ MAT'L FOR ATTACHMENT: SA516 Gr.70




DETAIL "A" PIPE SUPPORT
SCALE: 2X
QTY: 2 AS SHOWN, 2 OPPOSITE HAND

⚠ MAT'L FOR ATTACHMENT: SA516 Gr.70




DETAIL "B" TROUGH SUPPORT
SCALE: 2X
QTY: 2 AS SHOWN, 2 OPPOSITE HAND

⚠6 AS BUILT
DEREK SHIH DATE 11/4/05

⚠ uop CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| JCP PROJECT (JOB NO. : 0-3515-20) | | | |
|---|---|---|---|
| ISSUE PURPOSE: | AB | | |
| RESULT CODE:A,B,R,F | A | | |
| NEXT STATUS:FA,FI,FC,AB | – | | |
| RESUBMISSION DATE: | – | | |
| RESPONSIBLE DEPT./PERSON: | EQP / [illegible] | | |
| REVIEW DATE: | 8 DEC. '05 | | |
| A Approved/Reviewed without Comment | B Approved/Reviewed with minor Comment | | |
| R Resubmit incorporating comments | FI Not Subject to Review | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract. | | | |
| JGC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL REV. |
| | V- | 2152-201-A- | 002 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX/X | NOZZLE |
| ⚠ | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYATOR
P.O. NO. : 0-3515-P-2152-201-A

TITLE:
TOWER ATTACHMENTS
REFLUX DISTRIBUTOR
AND TROUGH SUPPORTS

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

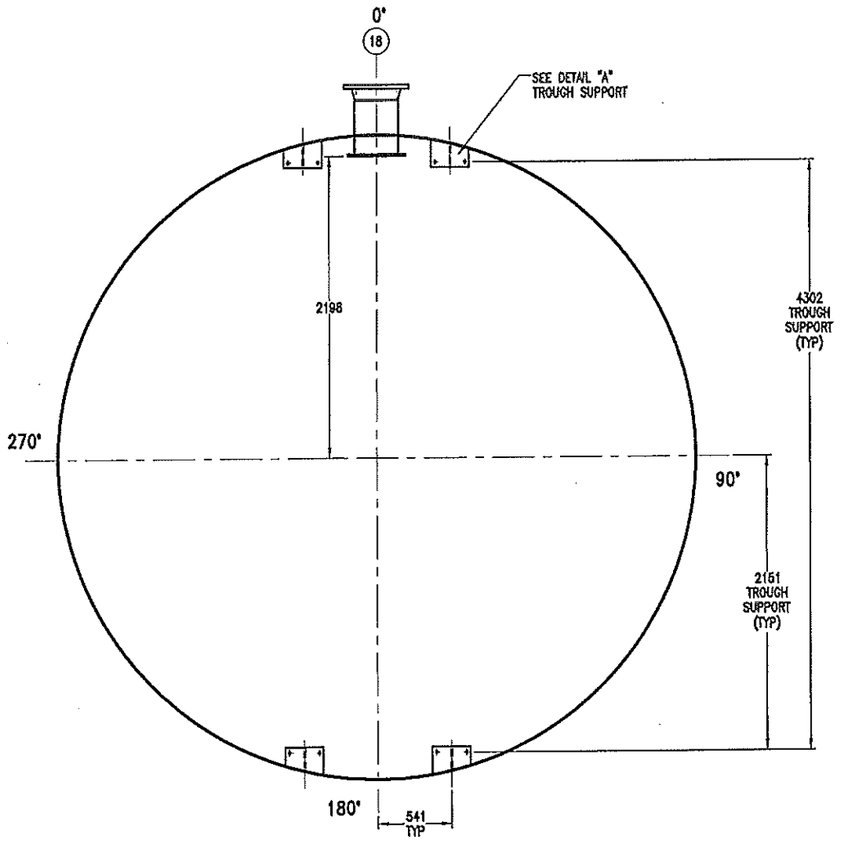
BY PJW 2/24/05 | SCALE 1:20
CHECKED DHS 3/05 | NO. SHTS. 4 | LATEST AS LEV. C
REVIEWED TCH 3/05 | SHT NO. 2
APPROVED JRO 3/18/05 | DWG NO. D-228617

uop
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-2000
FAX: (716)879-7215

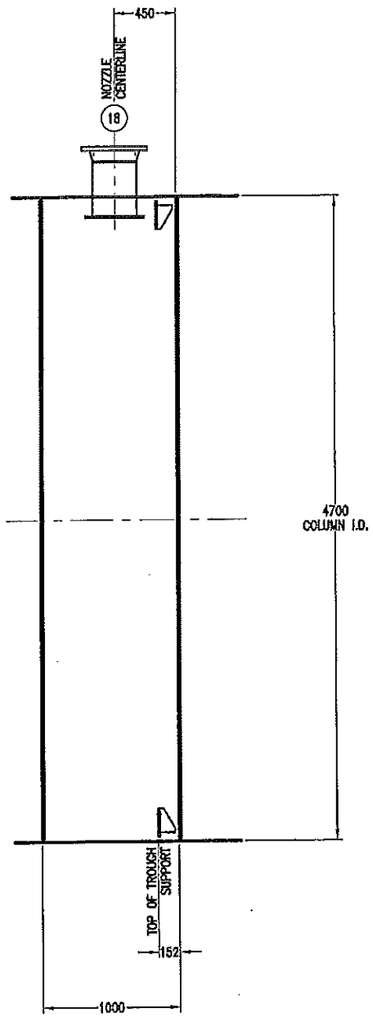
"Centered on Quality"

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| C | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| B | CHANGED WELD SIZES | 8/19/05 | PJW | PJW 8/05 | DHS 8/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/28/05 | PJW | DHS 4/05 | JA 4/05 |

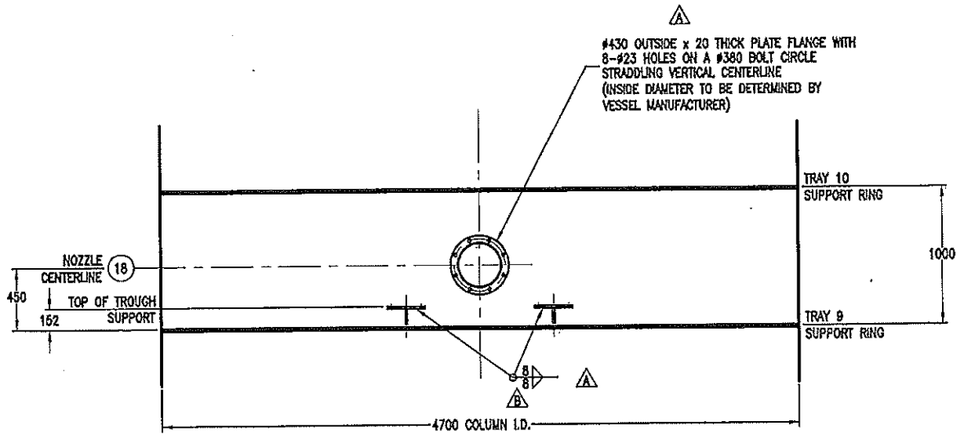
NOT TO BE USED FOR CONSTRUCTION
08-DEC-2005
AS BUILT




PLAN VIEW OF FEED DISTRIBUTOR ATTACHMENTS ABOVE SUPPORT RING 9

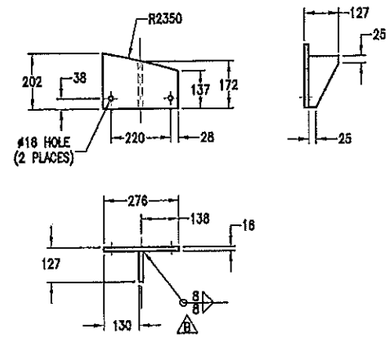



SECTION VIEW OF FEED DISTRIBUTOR ATTACHMENTS




ELEVATION VIEW OF FEED DISTRIBUTOR ATTACHMENTS

A MAT'L FOR ATTACHMENT: SA516 Gr.70




DETAIL "A" TROUGH SUPPORT
SCALE: 2X
QTY: 2 AS SHOWN, 2 OPPOSITE HAND

| JCP PROJECT (JOB NO. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE: | AB |
| RESULT CODE:A,B,R,F | 4 |
| NEXT STATUS:FA,FI,FC,AB | — |
| RESUBMISSION DATE: | — |
| RESPONSIBLE DEPT./PERSON: | EQP / Adam C. |
| REVIEW DATE: | 8 DEC '06 |

A Approved/Reviewed without Comment B Approved/Reviewed with minor Comment
R Resubmit incorporating comments N Not Subject to Review

Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract

| JGC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-201-A- | 003 | 00 |

A AS BUILT
DEREK SHIH DATE 11/4/05

A UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX | NOZZLE |
| A | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYATOR
P.O. NO. : 0-3515-P-2152-201-A

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

TITLE: TOWER ATTACHMENTS FEED DISTRIBUTOR ABOVE TRAY 9

| BY | DATE | SCALE |
|---|---|---|
| PJW | 2/24/05 | 1:20 |

| CHECKED | DRS 3/05 | NO. SHTS | 4 | LATEST REV. LETTER | C |
|---|---|---|---|---|---|
| REVIEWED | TCH 3/05 | | | | |
| APPROVED | JRU 3/18/05 | SHEET | 3 | | |

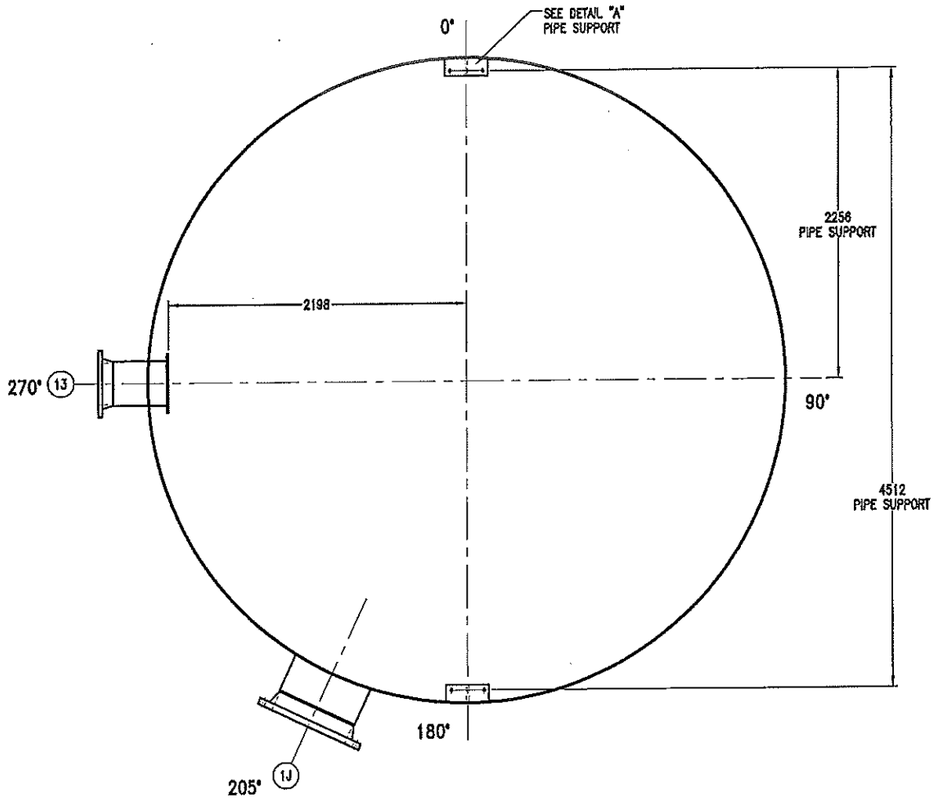
UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL (716)879-7601
FAX (716)879-7218

"Centered on Quality"

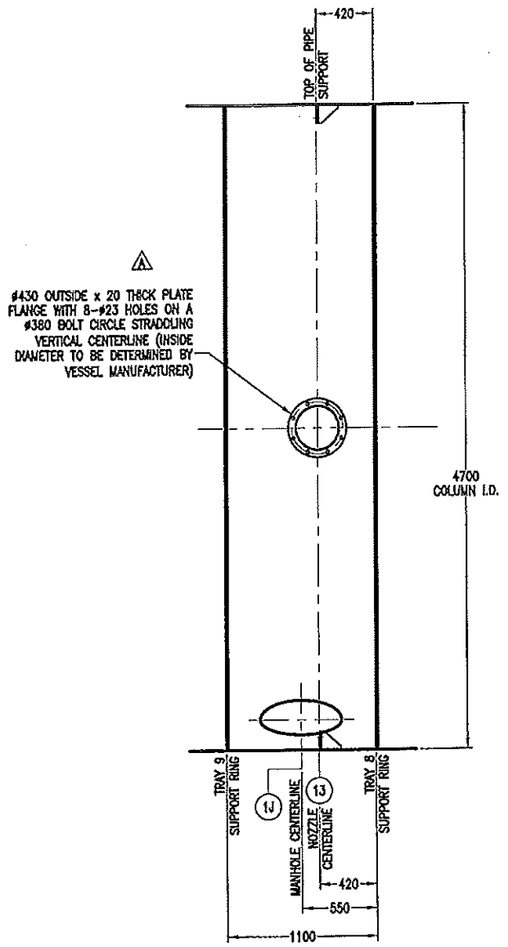
DWG NO. D-228617

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| C | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DRS 11/4/05 |
| B | CHANGED WELD SIZES | 8/19/05 | PJW | PJW 8/05 | DRS 8/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/28/05 | PJW | DRS 4/05 | JA 4/05 |

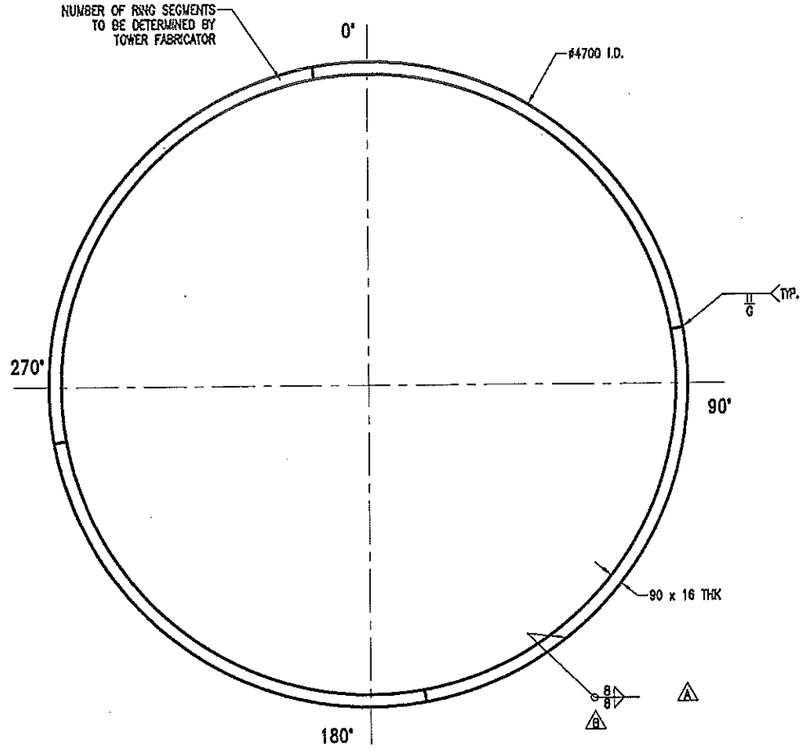
UNCONTROLLED 08-DEC-2006 AS BUILT



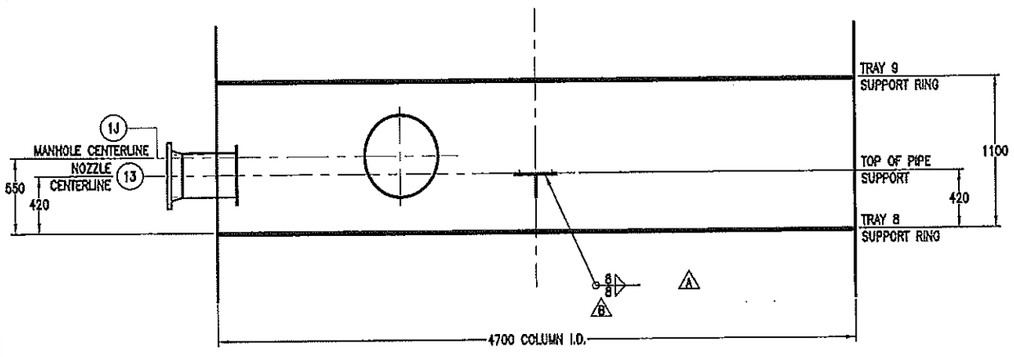

PLAN VIEW OF FEED DISTRIBUTOR ATTACHMENTS
ABOVE SUPPORT RING 8




ELEVATION VIEW OF FEED DISTRIBUTOR ATTACHMENTS

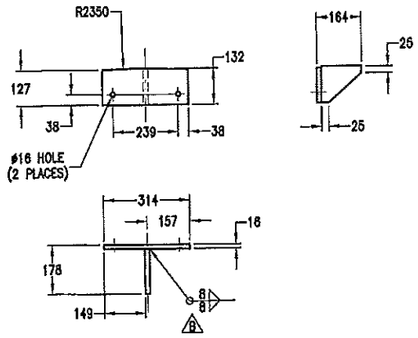



PLAN VIEW OF TRAY RING ATTACHEMENTS 1-10




SECTION VIEW OF FEED DISTRIBUTOR ATTACHMENTS

A MAT'L FOR ATTACHMENT: SA516 Gr.70




DETAIL "A" PIPE SUPPORT
SCALE: 2X
QTY: 2

G AS BUILT
DEREK SHIH DATE 11/4/05

A UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| JCP PROJECT (JOB NO. : 0-3515-20) | | | | |
|---|---|---|---|---|
| ISSUE PURPOSE: AB | | | | |
| RESULT CODE:A,B,R,F | A | | | |
| NEXT STATUS:FA,FI,FC,AB | — | | | |
| RESUBMISSION DATE: | — | | | |
| RESPONSIBLE DEPT./PERSON: | EQP/ | | | |
| REVIEW DATE: | 8 DEC. '05 | | | |
| A= Approved/Reviewed without Comment B= Approved/Reviewed with minor Comment R= Resubmit incorporating comments F= Not Subject to Review | | | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract. | | | | |
| JGC DOC NO. (By Vendor) | ORG. V- | PURCHASE ORDER NO. 2152-201-A-- | SERIAL 004 | REV. 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX/X | NOZZLE |
| A | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYATOR
P.O. NO. : 0-3515-P-2152-201-A

TITLE:
TOWER ATTACHMENTS
FEED DISTRIBUTOR
ABOVE TRAY 8

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-2000
FAX: (716)879-7218

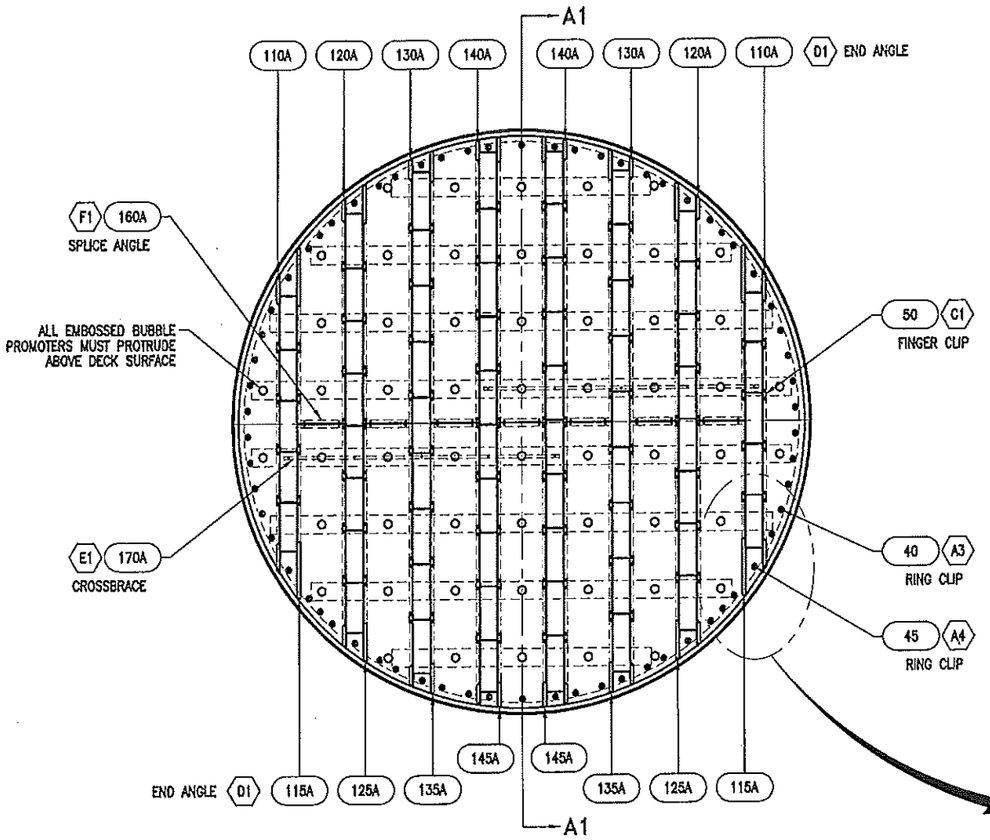
"Centered on Quality"

| BY | DATE |
|---|---|
| PJW | 2/24/05 |
| CHECKED DHS | 3/05 |
| REVIEWED TCH | 3/05 |
| APPROVED JRU | 3/18/05 |

SCALE 1:20
NO. SHTS. 4
LATEST ALT. LETTR C
SHT NO. 4
DWG NO. D-228617

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| C | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| B | CHANGED WELD SIZES | 8/19/05 | PJW | PJW 8/05 | DHS 8/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/28/05 | PJW | DHS 4/05 | JA 4/05 |

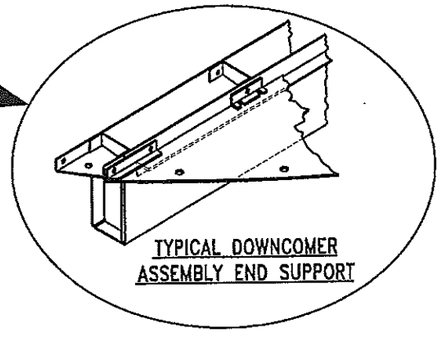
INTERIM
08-DEC-2005
AS BUILT

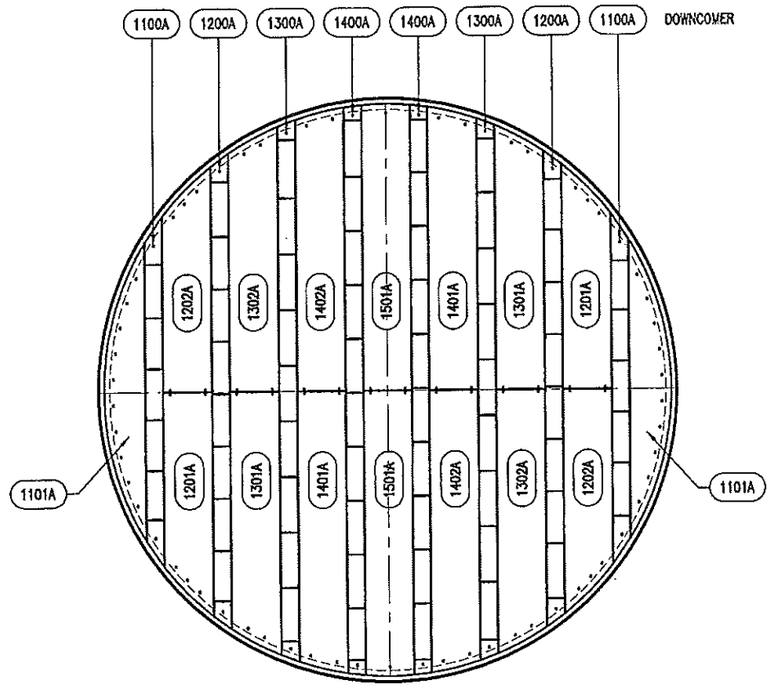



## ⚠B PLAN VIEW OF UOP MD TRAYS 1-8

FOR TRAY SPACING AND DOWNCOMER ORIENTATION
SEE UOP DRAWING D-2286172
SEE JGC DRAWING V-2152-201-A-001

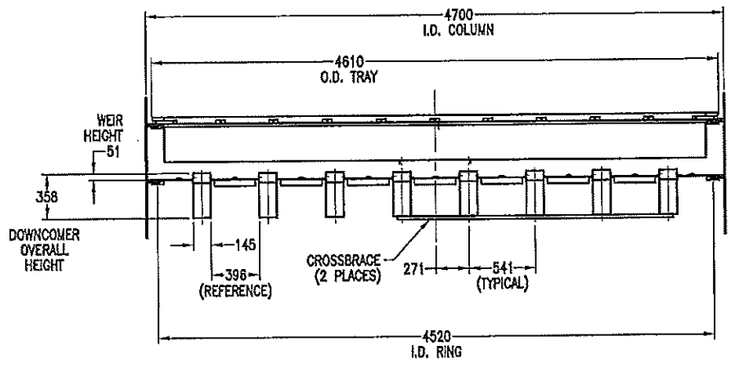
⚠B ⚠A




## DOWNCOMER AND DECK PARTS

FOR TRAYS 1-8




## SECTIONAL ELEVATION A1-A1

ROTATED 90° CCW

⚠C AS BUILT
DEREK SHIH DATE 11/4/05

⚠A

UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

## SHEET INDEX

| SHEET | DESCRIPTION |
|---|---|
| 1 | ⚠B UOP MD TRAYS 1-8 |
| 2 | ⚠B UOP MD TRAYS 9-10 |
| 3 | REFLUX DISTRIBUTOR |
| 4 | FEED DISTRIBUTOR |
| 5 | FEED DISTRIBUTOR |
| 6 | LOWER CHUTES |
| 7 | ASSEMBLY DETAILS |
| 8 | PARTS LIST, MATERIALS, & GENERAL NOTES |

| JCP PROJECT (JOB NO. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE: | AB |
| RESULT CODE:A,B,R,F | A |
| NEXT STATUS:FA,FI,FC,AB | – |
| RESUBMISSION DATE: | – |
| RESPONSIBLE DEPT./PERSON: | EQP/ |
| REVIEW DATE: | 8 DEC.'05 |

A Approved/Reviewed without Comment B Approved/Reviewed with minor Comment
R Resubmit incorporating comments FI Not Subject to Review

Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract.

| JGC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-201-A- | 005 | 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX/X | NOZZLE |
| ⚠X | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHENRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

TITLE: TRAY INSTALLATION UOP MD TRAYS 1-8 ⚠B

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

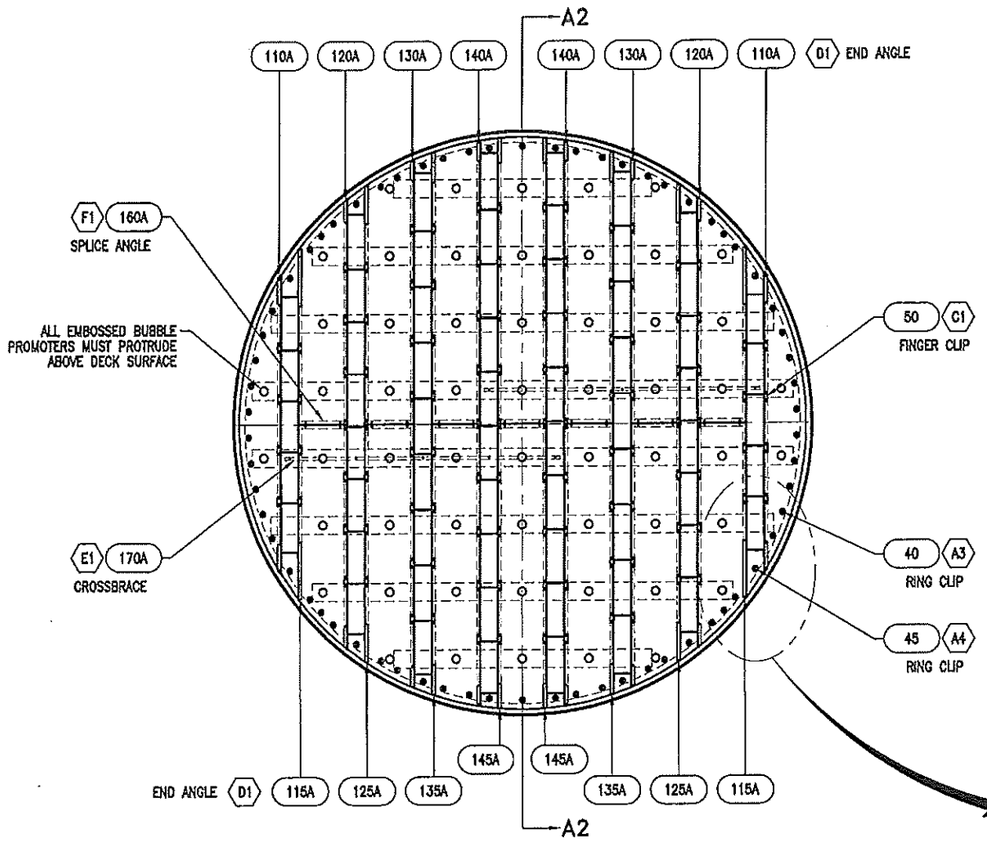
UOP PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-2000
FAX: (716)879-7219

"Centered on Quality"

| BY | DATE | SCALE |
|---|---|---|
| PJW | 2/23/05 | 1:24 |
| CHECKED DHS | 3/05 | NO. SHTS. 8 |
| REVIEWED TCH | 3/05 | LAST ALT. LETT. C |
| APPROVED JRU | 3/18/05 | |

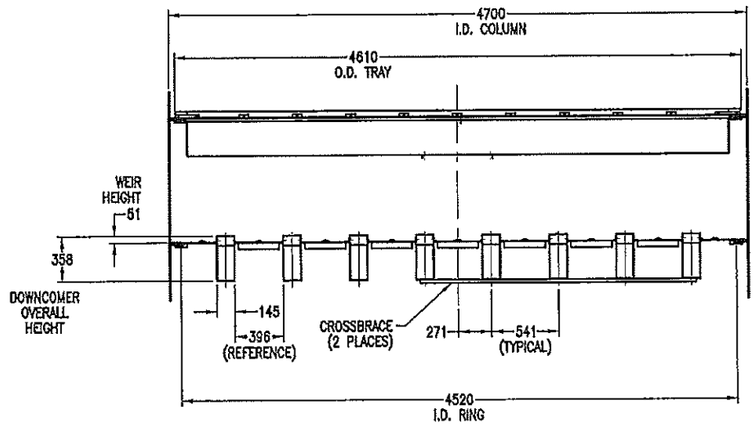
DWG. NO. D-2286173

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| C | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| B | CHANGED NOTES | 8/19/05 | PJW | PJW 8/05 | DHS 8/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |



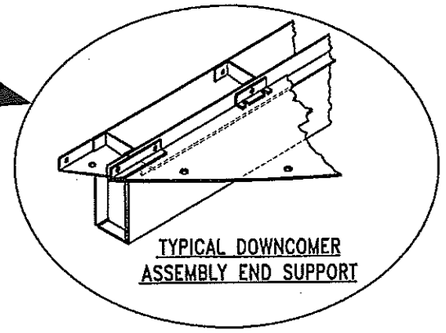

## ⚠B PLAN VIEW OF UOP MD TRAYS 9-10

FOR TRAY SPACING AND DOWNCOMER ORIENTATION
SEE UOP DRAWING D-2286172
SEE JGC DRAWING V-2152-201-A-001 ⚠A
⚠B

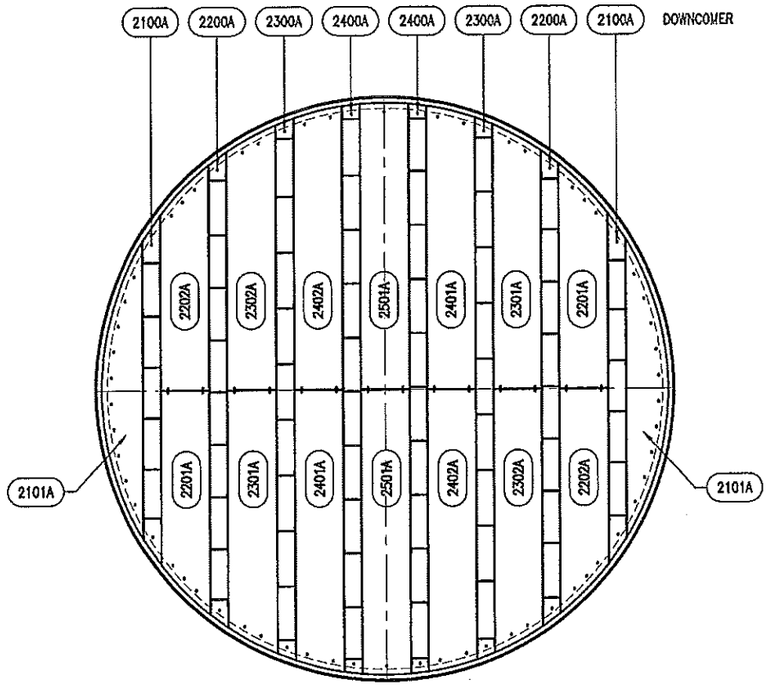



## SECTIONAL ELEVATION A2-A2

ROTATED 90° CCW



## TYPICAL DOWNCOMER ASSEMBLY END SUPPORT




## DOWNCOMER AND DECK PARTS

FOR TRAYS 9-10

| JCP PROJECT (JOB NO. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE: | AB |
| RESULT CODE:A,B,R,F | A |
| NEXT STATUS:FA,F),FC,AB | — |
| RESUBMISSION DATE: | — |
| RESPONSIBLE DEPT./PERSON: | EQP / [illegible] |
| REVIEW DATE: | 8 DEC 05 |

A Approved/Reviewed without Comment — B Approved/Reviewed with minor Comment
R Resubmit incorporating comments — F Not Subject to Review

Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract.

| JGC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-201-A- | 006 | 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX/X | NOZZLE |
| ⚠X | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

⚠C AS BUILT
DEREK SHIH DATE 11/4/05

⚠A

UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

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CUSTOMER: JUBAIL CHENRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

TITLE: TRAY INSTALLATION UOP MD TRAYS 9-10 ⚠B

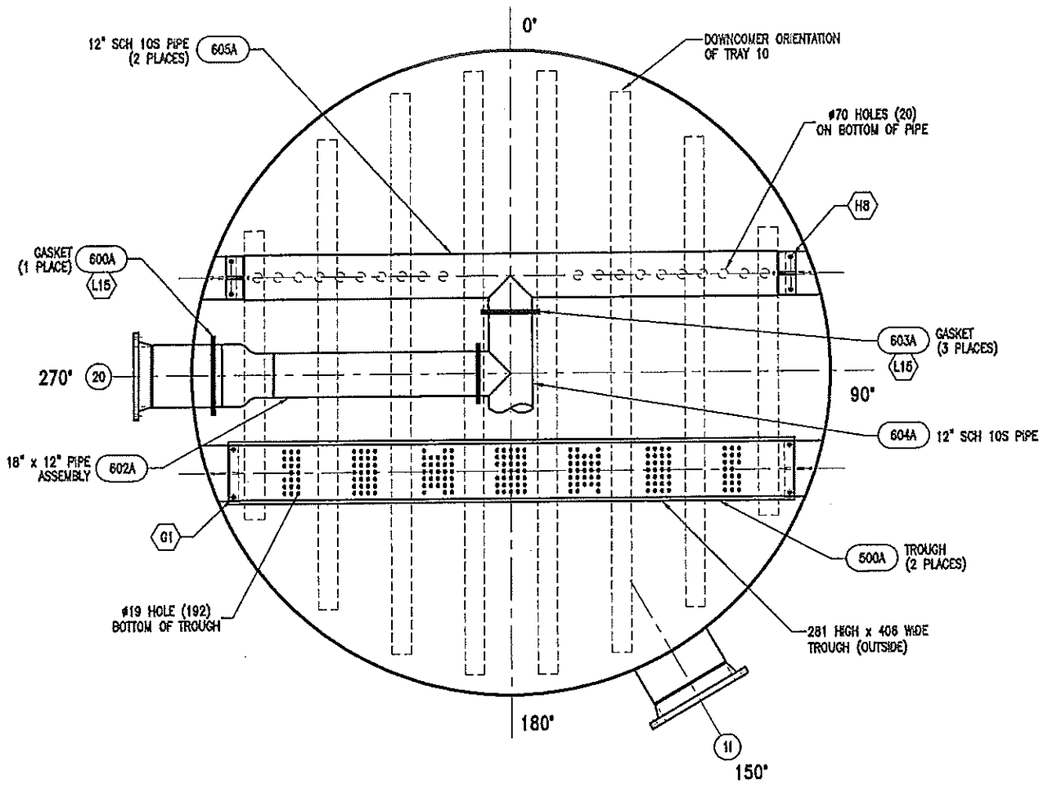
DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| C | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| B | CHANGED NOTES | 8/19/05 | PJW | PJW 8/05 | DHS 8/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |

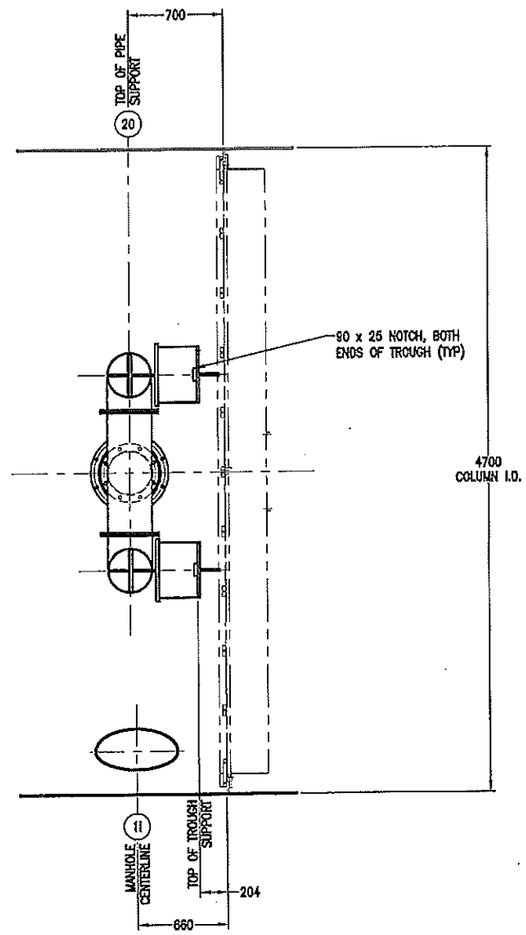
UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-2000
FAX: (716)879-7215

"Centered on Quality"

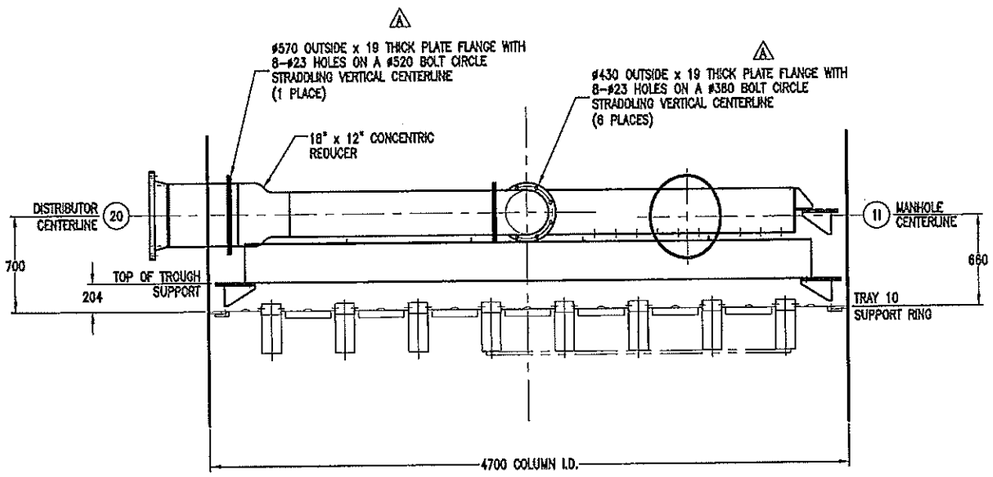
BY PJW 2/23/05 — SCALE 1:24
CHECKED DHS 3/05 — ENG. DATA — LAYOUT RELEASE
REVIEWED TCH 3/05
APPROVED JRU 3/18/05
DWG. NO. D-2286173 ⚠A




PLAN VIEW OF REFLUX DISTRIBUTOR ABOVE SUPPORT RING 10




ELEVATION VIEW


A
ø570 OUTSIDE x 19 THICK PLATE FLANGE WITH 8-ø23 HOLES ON A ø520 BOLT CIRCLE STRADDLING VERTICAL CENTERLINE (1 PLACE)
A
ø430 OUTSIDE x 19 THICK PLATE FLANGE WITH 8-ø23 HOLES ON A ø380 BOLT CIRCLE STRADDLING VERTICAL CENTERLINE (8 PLACES)
18" x 12" CONCENTRIC REDUCER
DISTRIBUTOR CENTERLINE
20
11
MANHOLE CENTERLINE
700
TOP OF TROUGH SUPPORT
204
660
TRAY 10 SUPPORT RING
4700 COLUMN I.D.

ELEVATION VIEW

B AS BUILT
DEREK SHIH DATE 11/4/05

A
UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| JCP PROJECT (JOB NO. : 0-3515-20) | | | |
|---|---|---|---|
| ISSUE PURPOSE: AB | | | |
| RESULT CODE:A,B,R,F | A | | |
| NEXT STATUS:FA,FI,FC,AB | — | | |
| RESUBMISSION DATE: | — | | |
| RESPONSIBLE DEPT./PERSON: | EQP/ | | |
| REVIEW DATE: | 8 DEC. 05 | | |
| A Approved/Reviewed without Comment B Approved/Reviewed with minor Comment R Resubmit incorporating comments FI Not Subject to Review | | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract. | | | |
| JCC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL REV. |
| | V- | 2152-201-A- | 007 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX | NOZZLE |
| A | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

TITLE: INSTALLATION REFLUX DISTRIBUTOR ABOVE TRAY 10

| BY DATE | SCALE |
|---|---|
| PJW 2/24/05 | 1:20 |
| CHECKED DHS 3/05 | NO. SHTS. 8 |
| REVIEWED TCH 3/05 | SHEET 3 |
| APPROVED JRU 3/18/05 | SIZE B |

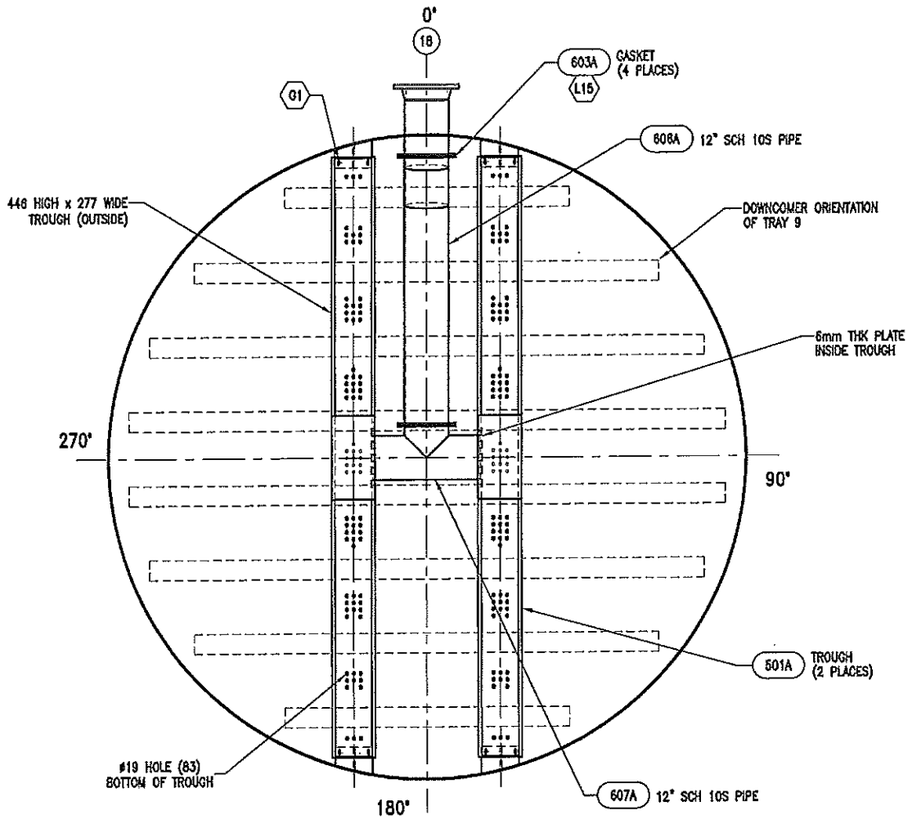
UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0988
TEL: (716)879-2000
FAX: (716)879-7213

"Centered on Quality"

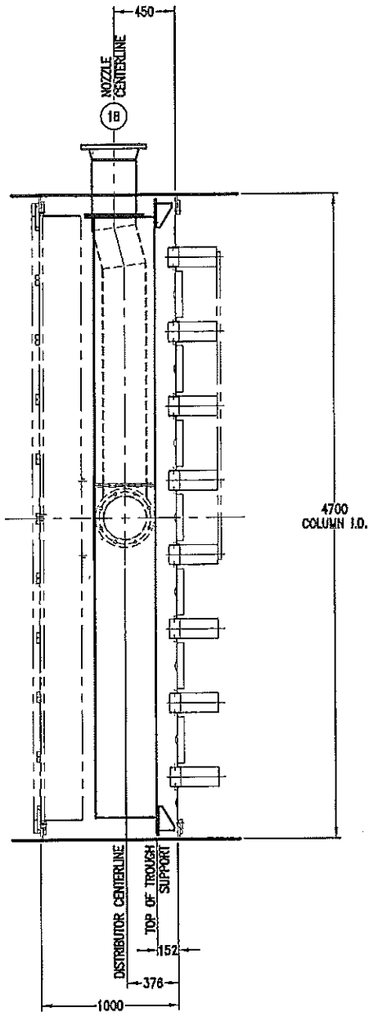
DWG NO. D-228617

| LETTER | ALTERATION | DATE | BY | CHK'D | APP'D |
|---|---|---|---|---|---|
| B | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |

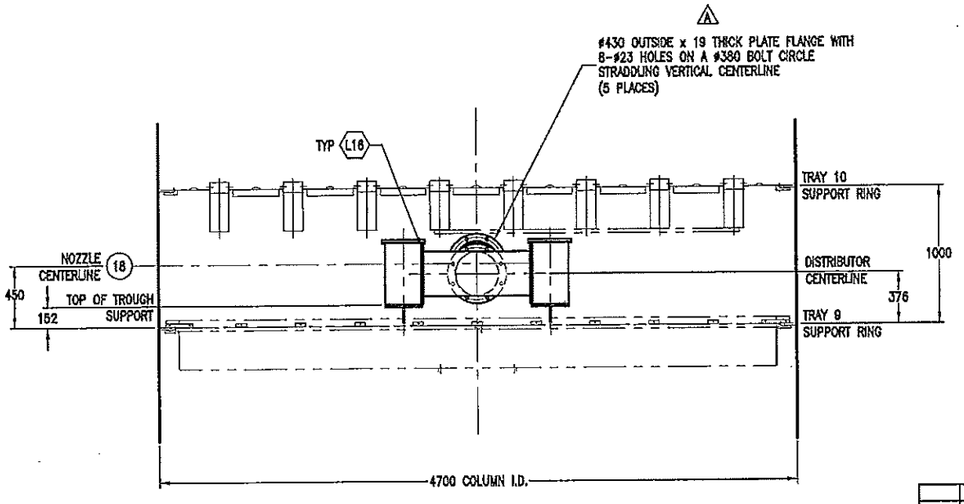
RECEIVED 08-DEC-2005 AS BUILT




PLAN VIEW OF FEED DISTRIBUTOR ABOVE SUPPORT RING 9




ELEVATION VIEW




ELEVATION VIEW

| JCP PROJECT (JOB NO. : 0-3515-20) | | |
|---|---|---|
| ISSUE PURPOSE: | AB | |
| RESULT CODE:A,B,R,F | | A |
| NEXT STATUS:FA,FI,FC,AB | | – |
| RESUBMISSION DATE: | | – |
| RESPONSIBLE DEPT./PERSON: | | EQP / Kahler |
| REVIEW DATE: | | 8 DEC. 05 |

A Approved/Reviewed without Comment B Approved/Reviewed with minor Comment
B Resubmit Incorporating comments Fi Not Subject to Review

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| JGC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-201-A- | 008 | 00 |

B AS BUILT
DEREK SHIH DATE 11/4/05

A
UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX | NOZZLE |
| X | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

TITLE: INSTALLATION FEED DISTRIBUTOR ABOVE TRAY 9

| BY | DATE | SCALE |
|---|---|---|
| PJW | 2/24/05 | 1:20 |
| CHECKED DHS | 3/05 | NO. SHTS 8 |
| REVIEWED TCH | 3/05 | LATEST REV LETTER B |
| APPROVED JRU | 3/18/05 | SHEET 4 |

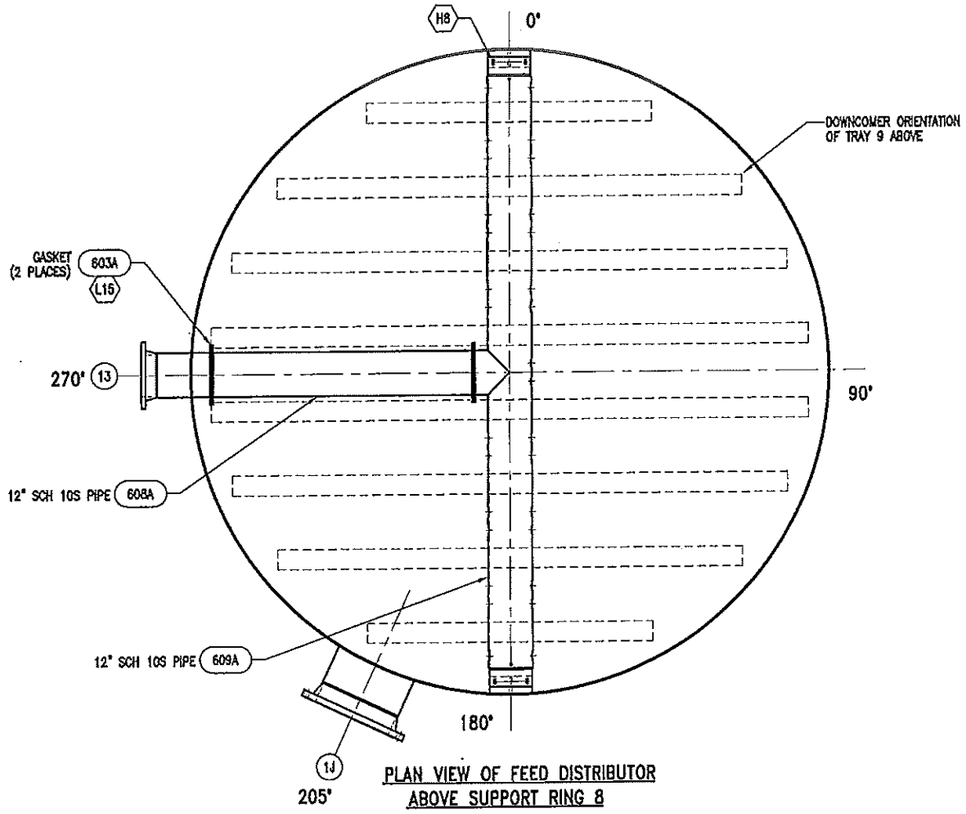
UOP PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-7000
FAX: (716)879-7215

"Centered on Quality"

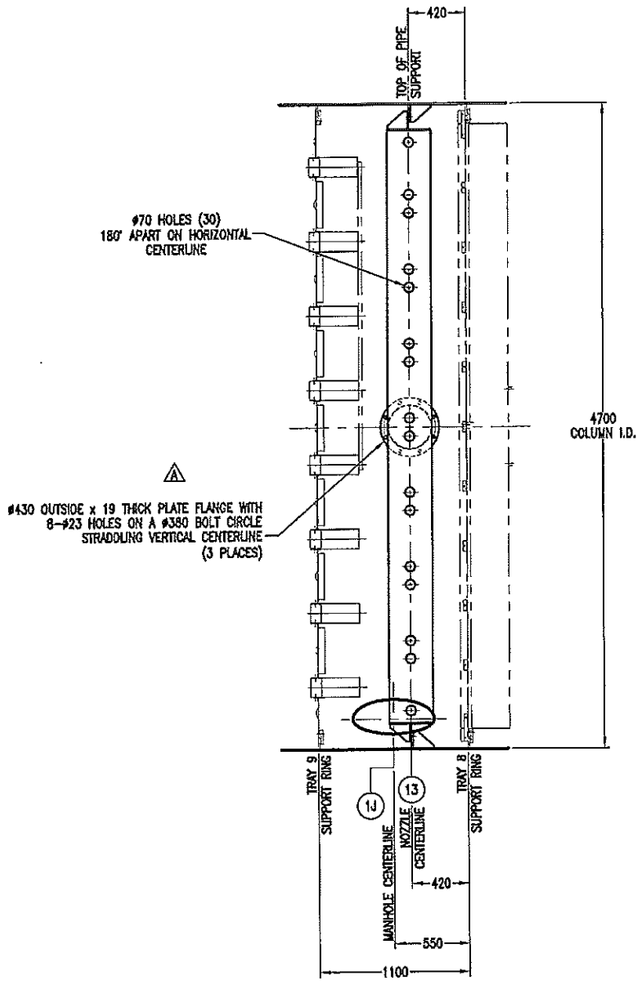
DWG NO. D-228617

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| B | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| A | CHANGED PER CUSTOMER COMMENTS | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |

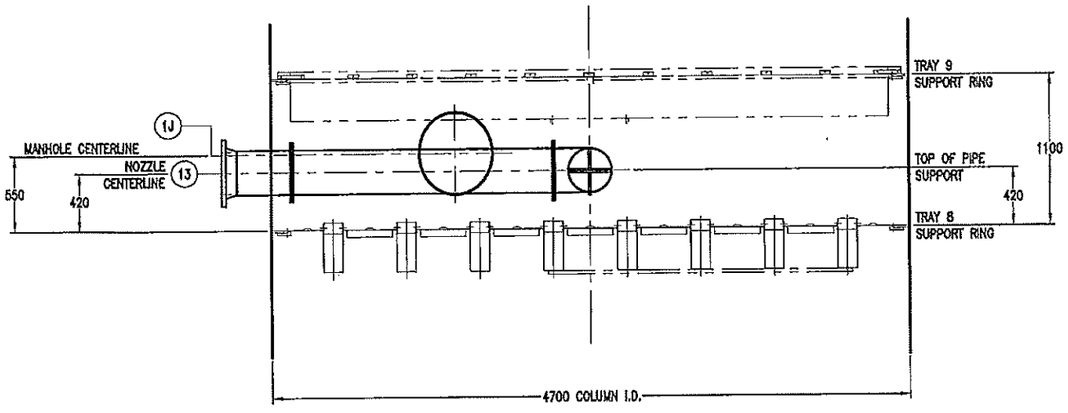
INTERNET 08-DEC-2005 AS BUILT




PLAN VIEW OF FEED DISTRIBUTOR ABOVE SUPPORT RING 8




ELEVATION VIEW




ELEVATION VIEW

| JCP PROJECT (JOB NO. : 0-3515-20) | | | |
|---|---|---|---|
| ISSUE PURPOSE: | AB | | |
| RESULT CODE:A,B,R,F | A | | |
| NEXT STATUS:FA,FI,FC,AB | – | | |
| RESUBMISSION DATE: | – | | |
| RESPONSIBLE DEPT./PERSON: | EQP / [illegible] | | |
| REVIEW DATE: | 8 DEC. '05 | | |
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| | V– | 2152-201-A– | 009 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX | NOZZLE |
| X | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

TITLE: INSTALLATION FEED DISTRIBUTOR ABOVE TRAY 8

| BY | DATE | SCALE |
|---|---|---|
| PJW | 2/24/05 | 1:20 |
| CHECKED | | XCL DIST. / LIGHT ALL LEVEL |
| DHS | 3/05 | 8 |
| REVIEWED | | DETAIL |
| TCH | 3/05 | 5 |
| APPROVED | | |
| JRU | 3/18/05 | |

UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-3000
FAX: (716)879-7215
"Centered on Quality"

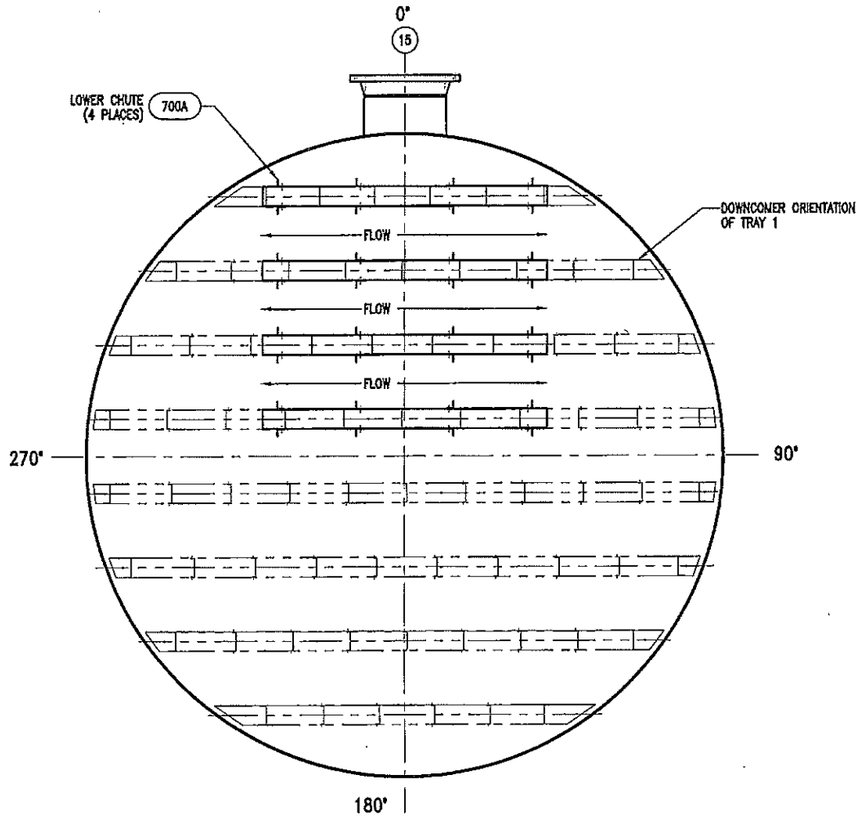
DWG NO. D-228617 B

A AS BUILT
DEREK SHIH DATE 11/4/05

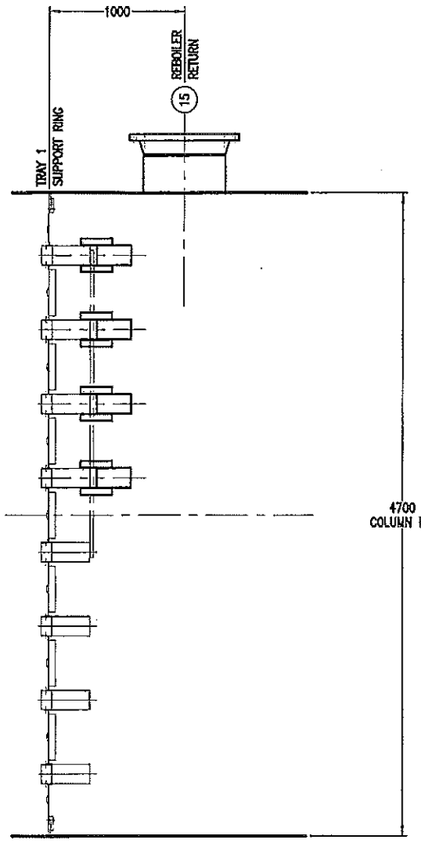
A UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| B | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |

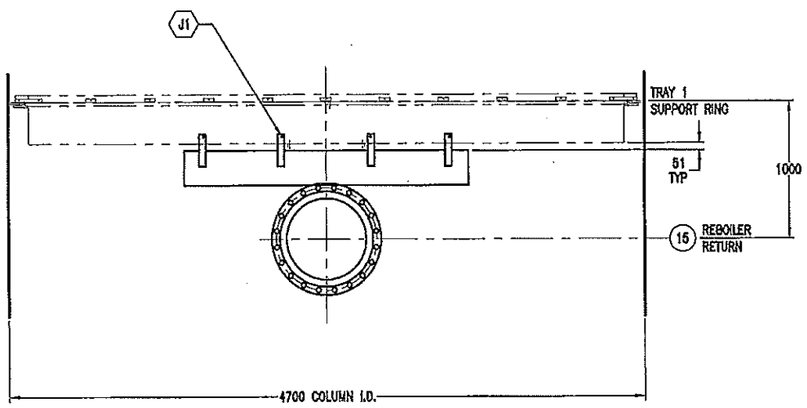
RECEIVED 08-DEC-2005 AS BUILT




PLAN VIEW OF LOWER CHUTES BELOW TRAY 1




ELEVATION VIEW




ELEVATION VIEW

| JCP PROJECT (JOB NO. : 0-3515-20) | | | |
|---|---|---|---|
| ISSUE PURPOSE: | AB | | |
| RESULT CODE:A,B,R,F | | A | |
| NEXT STATUS:FA,FI,FC,AB | | – | |
| RESUBMISSION DATE: | | – | |
| RESPONSIBLE DEPT./PERSON: | | FQP / [illegible] | |
| REVIEW DATE: | | 8 DEC. 05 | |
| A Approved/Reviewed without Comment B Approved/Reviewed with minor Comment R Resubmit incorporating comments FI Not Subject to Review | | | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract. | | | |
| JGC DOC NO. (By Vendor) | ORIG. PURCHASE ORDER NO. | SERIAL | REV. |
| | V- 2152-201-A- | 010 | 00 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX | NOZZLE |
| A | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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A AS BUILT
DEREK SHIH DATE 11/4/05

A
UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

TITLE:
INSTALLATION
LOWER CHUTES
BELOW TRAY 1

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| B | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| A | CERTIFIED | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |

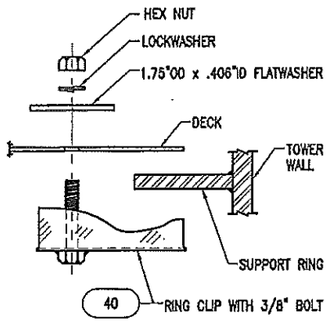
UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL (716)879-2000
FAX (716)879-7218

"Centered on Quality"

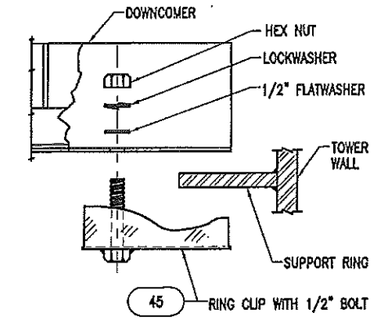
| BY | DATE | SCALE |
|---|---|---|
| PJW | 2/24/05 | 1:20 |
| CHECKED DHS | 3/05 | NO. SHTS. 8 |
| REVIEWED TCH | 3/05 | LATEST AS BUILT LETTER B |
| APPROVED JRU | 3/18/05 | REVISION 6 |

DWG NO. D-2286173

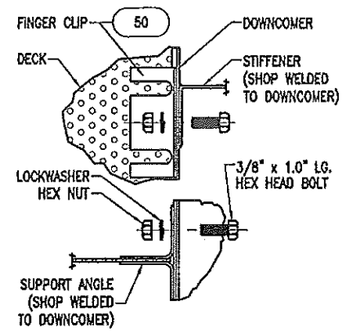
IN 08-DEC-2005 AS BUILT



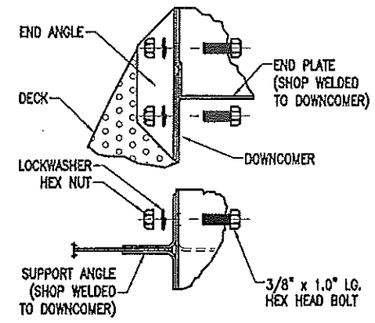

A3 4" RING CLIP DETAIL



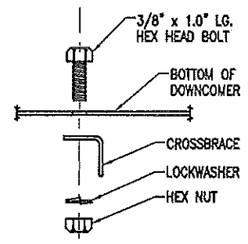

A4 4" RING CLIP DETAIL



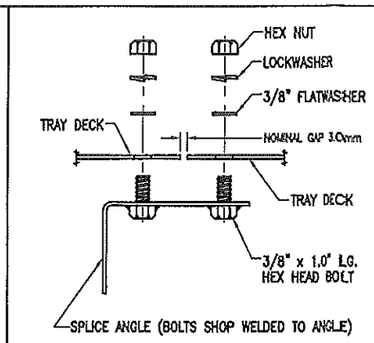

C1 FINGER CLIP DETAIL



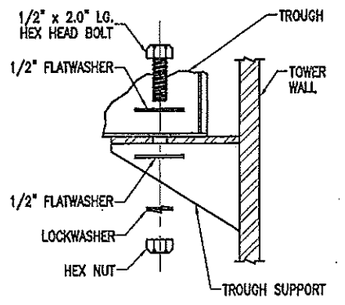

D1 END ANGLE DETAIL



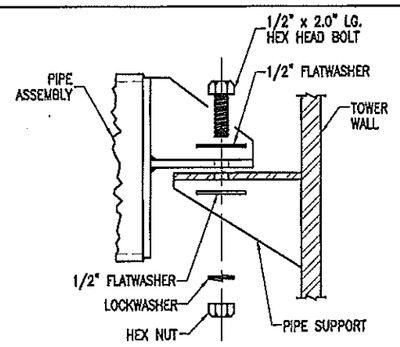

E1 CROSSBRACE DETAIL



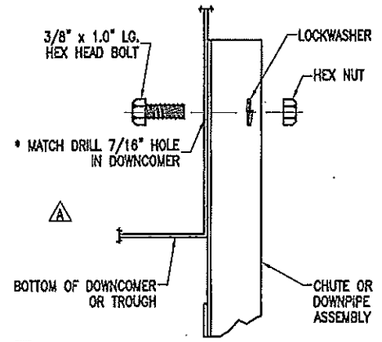

F1 SPLICE ANGLE DETAIL



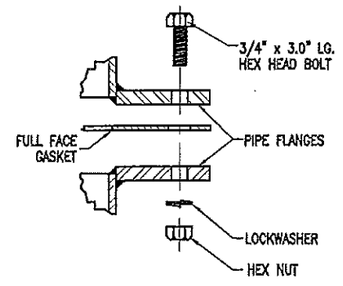

G1 TROUGH ATTACHMENT DETAIL



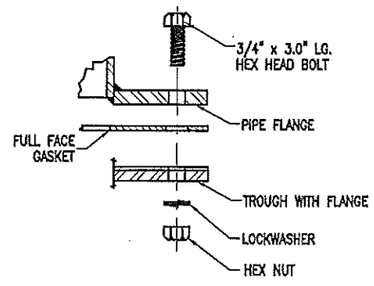

H8 PIPE ATTACHMENT DETAIL




J1 LOWER CHUTE/DOWNPIPE ATTACHMENT DETAIL




L15 PIPE FLANGE DETAIL (3/4")




L16 PIPE FLANGE/TROUGH DETAIL (3/4")

| JCP PROJECT (JOB NO. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE: AB | |
| RESULT CODE:A,B,R,F | ( A ) |
| NEXT STATUS:FA,FI,FC,AB | ( – ) |
| RESUBMISSION DATE: | ( – ) |
| RESPONSIBLE DEPT./PERSON: | ( EQP / KAHLIL ) |
| REVIEW DATE: | ( 8 DEC. '05 ) |
| A Approved/Reviewed without Comment B Approved/Reviewed with minor Comment R Resubmit incorporating comments FI Not Subject to Review | |
| Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract. | |

| JGC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V- | 2152-201-A- | 011 | 00 |

B AS BUILT
DEREK SHIH DATE 11/4/05

A
uop CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| B | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX/X | NOZZLE |
| X | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

TITLE: TRAY INSTALLATION ASSEMBLY DETAILS

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

BY PJW 2/25/05 | SCALE NONE
CHECKED DHS 3/05
REVIEWED TCH 3/05
APPROVED JRU 3/18/05
DWG. NO. D-228617

UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-2000
FAX: (716)879-7215

"Centered on Quality"

## TRAY PART LIST

| PART NO. | REQ'D FOR ONE TRAY | DESCRIPTION OF PART | TTL REQ'D | USED ON TRAYS NO |
|---|---|---|---|---|
| 1100A | 2 | DOWNCOMER | 16 | 1–8 |
| 1200A | 2 | DOWNCOMER | 16 | 1–8 |
| 1300A | 2 | DOWNCOMER | 16 | 1–8 |
| 1400A | 2 | DOWNCOMER | 16 | 1–8 |
| 2100A | 2 | DOWNCOMER | 4 | 9–10 |
| 2200A | 2 | DOWNCOMER | 4 | 9–10 |
| 2300A | 2 | DOWNCOMER | 4 | 9–10 |
| 2400A | 2 | DOWNCOMER | 4 | 9–10 |
| | | | | |
| 110A | 4 | END ANGLES * | 42 | 1–10 |
| 115A | 4 | END ANGLES * | 42 | 1–10 |
| 120A | 4 | END ANGLES * | 42 | 1–10 |
| 125A | 4 | END ANGLES * | 42 | 1–10 |
| 130A | 4 | END ANGLES * | 42 | 1–10 |
| 135A | 4 | END ANGLES * | 42 | 1–10 |
| 140A | 4 | END ANGLES * | 42 | 1–10 |
| 145A | 4 | END ANGLES * | 42 | 1–10 |
| | | | | |
| 1101A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| 1201A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| 1202A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| 1301A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| 1302A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| 1401A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| 1402A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| 1501A | 2 | TRAY DECK SEGMENT | 16 | 1–8 |
| | | | | |
| 2101A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| 2201A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| 2202A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| 2301A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| 2302A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| 2401A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| 2402A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| 2501A | 2 | TRAY DECK SEGMENT | 4 | 9–10 |
| | | | | |
| 160A | 7 | SPLICE ANGLE * | 72 | 1–10 |
| | | | | |
| 170A | 2 | CROSSBRACE * | 22 | 1–10 |
| | | | | |
| 700A | 4 | LOWER CHUTE | 4 | BELOW TRAY 1 |
| | | | | |

* INCLUDES 2% SPARES (2 MINIMUM)

## DISTRIBUTOR PART LIST

| PART NO. | REQ'D FOR ONE TRAY | DESCRIPTION OF PART | TTL REQ'D | USED ON TRAYS NO |
|---|---|---|---|---|
| 500A | – | TROUGH | 2 | ABOVE TRAY 10 |
| 501A | – | TROUGH | 2 | ABOVE TRAY 9 |
| 600A | – | GASKET ** | 2 | ABOVE TRAY 10 |
| 602A | – | 18" x 12" PIPE | 1 | ABOVE TRAY 10 |
| 603A | – | GASKET ** | 18 | ABOVE TRAYS 10, 9, 8 |
| 604A | – | 12" REFLUX PIPE | 1 | ABOVE TRAY 10 |
| 605A | – | 12" REFLUX PIPE | 2 | ABOVE TRAY 10 |
| 606A | – | 12" FEED PIPE | 1 | ABOVE TRAY 9 |
| 607A | – | 12" FEED PIPE | 1 | ABOVE TRAY 9 |
| 608A | – | 12" FEED PIPE | 1 | ABOVE TRAY 8 |
| 609A | – | 12" FEED PIPE | 1 | ABOVE TRAY 8 |
| | | | | |

** INCLUDES 100% SPARES

## HARDWARE LIST

| PART NO. | DESCRIPTION OF PART | TTL REQ'D |
|---|---|---|
| | | |
| 40 | RING CLIP * | 525 |
| 45 | RING CLIP * | 168 |
| 50 | FINGER CLIP * | 1,176 |
| | | |
| – | 3/8" x 1.0" HEX HEAD BOLT * | 1,987 |
| – | 1/2" x 2.0" HEX HEAD BOLT * | 30 |
| – | 3/4" x 3.0" HEX HEAD BOLT * | 84 |
| | | |
| – | 3/8" HEX NUT * | 2,806 |
| – | 1/2" HEX NUT * | 201 |
| – | 3/4" HEX NUT * | 84 |
| | | |
| – | 3/8" LOCKWASHER * | 2,806 |
| – | 1/2" LOCKWASHER * | 201 |
| – | 3/4" LOCKWASHER * | 84 |
| | | |
| – | 3/8" FLAT WASHER * | 328 |
| – | 1/2" FLAT WASHER * | 227 |
| | | |
| – | .406" I.D. x 1.75" O.D. WASHER * | 525 |
| | | |

* INCLUDES 5% SPARES (2 MINIMUM)

## MATERIAL LIST

| | PART | THICKNESS | MATERIAL | SPECIFICATION |
|---|---|---|---|---|
| A | GASKET | 1.6mm | DURABLA (NON-ASBESTOS) | DURLON 9000 (BLUE) OR 9400 (BLACK) OR DURABLA BLACK NITRILE |
| A | PIPE | SEE DWGS. | 304L STAINLESS STEEL | ASTM A-312 |
| A | FLANGE | 19mm | 304L STAINLESS STEEL | ASTM A-240 |
| | PLATE | SEE DWGS. | 304L STAINLESS STEEL | ASTM A-240 |
| | TROUGH | 2.8mm | 410S STAINLESS STEEL | ASTM A-240 |
| | DOWNCOMER | 2.8mm | 410S STAINLESS STEEL | ASTM A-240 |
| | CROSSBRACE / END ANGLE | 2.0mm | 410S STAINLESS STEEL | ASTM A-240 |
| | TRAY DECK | 2.0mm | 410S STAINLESS STEEL | ASTM A-240 |
| | SPLICE ANGLE | 2.0mm | 410S STAINLESS STEEL | ASTM A-240 |
| | CHUTE | 2.0mm | 410S STAINLESS STEEL | ASTM A-240 |
| | RING CLIP BODY (PN 40/45) | 2.8mm | 410S STAINLESS STEEL | ASTM A-240 |
| | FINGER CLIP (PN 50) | 2.0mm | 410S STAINLESS STEEL | ASTM A-240 |
| | BOLT | UNC | 410 STAINLESS STEEL | ASTM A-193 GR B6 |
| | NUT | UNC | 410 STAINLESS STEEL | ASTM A-194 GR 6 |
| A | LOCKWASHER | UNC | 304 STAINLESS STEEL | NONE |
| | FLATWASHER | UNC | 410 STAINLESS STEEL | NONE |
| | FLATWASHER (44mm O.D.)/11mm I.D. | 3.4mm | 410S STAINLESS STEEL | ASTM A-240 |

## TRAY INSTALLATION NOTES

1. TRAYS ARE TOP INSTALLED ONLY.
2. TRAYS ARE TO BE INSTALLED LEVEL WITHIN 7.0mm HIGH POINT TO LOW POINT. TROUGHS ARE TO BE INSTALLED LEVEL WITHIN 3.5mm HIGH POINT TO LOW POINT.
3. TRAYS ARE NUMBERED FROM THE BOTTOM OF THE COLUMN.
4. EVEN NUMBERED TRAYS ARE TO BE INSTALLED 90° TO ODD NUMBERED TRAYS. SEE TOWER ARRANGEMENT DRAWING D-2286172-1 FOR ORIENTATION OF TRAYS.
5. ALL FABRICATED PARTS (EXCEPT FASTENERS AND SMALL HARDWARE ITEMS) ARE METAL DIE STAMPED WITH THE PART NUMBERS LISTED ON THIS SHEET.
6. ALL PARTS ARE DESIGNED TO PASS THROUGH A 600mm MIN. I.D. MANHOLE.
7. ALL BOLTING REQUIRES A LOCKWASHER.

| JCP PROJECT (JOB NO. : 0-3515-20) | |
|---|---|
| ISSUE PURPOSE: | AB |
| RESULT CODE:A,B,R,F | A |
| NEXT STATUS:FA,FI,FC,AB | – |
| RESUBMISSION DATE: | – |
| RESPONSIBLE DEPT./PERSON: | EQP/[illegible] |
| REVIEW DATE: | 8 DEC. '05 |

A: Approved/Reviewed without Comment. B: Approved/Reviewed with minor Comment. R: Resubmit Incorporating comments. FI: Not Subject to Review.

Approval or review hereunder shall not be construed to relieve Vendor/Subcontractor of his responsibilities and liability under the Contract.

| JGC DOC NO. (By Vendor) | ORIG. | PURCHASE ORDER NO. | SERIAL | REV. |
|---|---|---|---|---|
| | V– | 2152-201-A– | 012 | 00 |

B AS BUILT
DEREK SHIH DATE 11/4/05

A

UOP CERTIFIED DRAWING
JOE AGNELLO DATE 4/29/05

| SYMBOL KEY | |
|---|---|
| XXXX | PART NUMBER |
| XX | NOZZLE |
| XX/Y | NOZZLE |
| X | REVISION |
| XXX | ASSEMBLY DETAIL |
| XX | NOTES |

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CUSTOMER: JUBAIL CHEVRON PHILLIPS COMPANY
LOCATION : JUBAIL, SAUDI ARABIA
ITEM NO. : R-3201 ALKYLATOR
P.O. NO. : 0-3515-P-2152-201-A

TITLE: TRAY INSTALLATION PARTS LIST, MATERIAL, AND GENERAL NOTES

DIRECT INQUIRIES PERTAINING TO THIS DRAWING AND ASSOCIATED EQUIPMENT TO UOP PROCESS EQUIPMENT.

BY PJW 2/25/05 | SCALE NONE
CHECKED DHS 3/05
REVIEWED TCH 3/05
APPROVED JRU 3/18/05

UOP
PROCESS EQUIPMENT
175 E. PARK DRIVE
TONAWANDA, NY 14151-0986
TEL: (716)879-2000
FAX: (716)879-7215

"Centered on Quality"

DWG NO. D-2286173

| LETTER | ALTERATION | DATE | BY | CHK'D | APPV'D |
|---|---|---|---|---|---|
| B | AS BUILT | 11/1/05 | PJW | PJW 11/05 | DHS 11/4/05 |
| A | CHANGED PER CUSTOMER COMMENTS, CERTIFIED | 4/29/05 | PJW | DHS 4/05 | JA 4/05 |